

# **Machinery**

and production engineering

A JOURNAL OF PRODUCTION ENGINEERING AND MACHINE TOOLS

**VOLUME 107**

**July to December, 1965**

**THE MACHINERY PUBLISHING COMPANY, LTD.**

*Editorial Office:*

CLIFTON HOUSE, 83-117 EUSTON ROAD, LONDON, N.W.1

Telephone: EUSon 8441 (4 lines) Telegrams: Machtool, London, N.W.1

*Head Office:*

NEW ENGLAND HOUSE, NEW ENGLAND STREET, BRIGHTON 1

Telephone: Brighton 61334 (4 lines) Telegrams: Machtool, Brighton

# INDEX TO MACHINERY

## VOLUME 107

ALL ITEMS MARKED \* ARE PATENT SPECIFICATIONS

A		PAGE			PAGE			PAGE
ABS plastics components. Electro-plated ..	1398	Adapters. "pbc" spindle speed increasing ..	1324	Aldellverken AB.: Type U35/1A automatic-cycle drilling machine ..	897			
A. E. I. - Birlec, Ltd.: Direct arc furnaces with electrode counterbalancing arrangements ..	1328	Adcock & Shipley, Ltd.: British-built Bridgeport machine adapted for continuous milling small aluminium components for copying machines ..	330	Alexander, George H., Machinery Ltd. ..	603, 1002			
A. E. I. control systems on Asquith numerically-controlled drilling and tapping machine ..	1229	Visit by German industrialists ..	49	Alexander type 2 LP pantograph engraving machine ..	483			
A. E. I. Plan-E-Trol continuous-path control system ..	24	Adcock & Shipley (Bridgeport), Ltd. ..	378	Alfa-Laval, Ltd.: TurboMatic coolant clarifying installation at Rolls-Royce ..	499			
A. E. I. punched-tape digital control system. Grimston co-ordinate setting table incorporating ..	43, 105	Adcock & Shipley (Sales), Ltd. ..	330, 658	Alfing machine for milling location spots on crankshafts ..	812			
A. E. W., Ltd.: Electric ovens ..	981	Adhesive bonding of aluminium ..	40	Aligning large jig components. Light beam system for ..	645			
Oven for pre-heating plastics sheets ..	1273	Adhesive, Evo-Stik, used for bonding stator laminations ..	817	Alignment errors in machine tools. Automatic correction of ..	674			
A. I. Welders, Ltd.: Type FW/6 friction welding machine ..	84	Adhesives in assembly. Some applications of ..	171	Alloys. New Fontargen surfacing ..	1395			
AMF Thermatool Inc.: High-frequency welding process for producing thin tube ..	916	Admel International, Ltd.: Diplomat drawing stand ..	1312	Allspeeds, Ltd.: Air-operated equipment for the remote control of Kopp speed variators ..	975			
Machine for producing welded tubes from spirally-wound material ..	971	Monarch filing cabinet ..	301	Allweather Paints: Piton stainless steel coating system ..	1054			
Special sections made by Thermatool welding ..	926	Advanced Industrial Fasteners exhibition at U. S. Trade Center ..	718	Aluminium alloy forgings for Saturn V rocket. Large ..	209			
A. M. T. (Birmingham), Ltd.: Welded-steel machine tool structures ..	1104	Aerograph De Vilbiss Co., Ltd.: Electrostatic spraying equipment ..	259	Aluminium alloy. Superspeed 946 ..	1034			
A. S. B. magnetic proximity detector switch ..	1207	Aerosol lubricant. New Rocol ..	932	Aluminium components for Rank Xerox copying machines. Continuous milling ..	330			
AT AG equipment for grading motor car pistons ..	1172	Agathon type 150-SL centreless grinder ..	1116	Aluminium. Diffusion bonding of ..	355			
Abrasive-band finishing machine. Vanco Flexiband No. 1 ..	416	Agricultural engines. Die cast components for ..	707	Aluminium Federation: Structural bonding of aluminium ..	40			
Abrasive-belt grinders. Carborundum-Kewa ..	924	Air-bearing drill for circuit boards ..	191	Aluminium holding and melting. Heatlock gas-fired furnace for ..	10			
Abrasive flap wheel. Bear-Tex ..	92	Air-bearing spindles. Developments in connection with Westwind ..	188	Aluminium sheet. Bronx levelling machine for light-gauge polished ..	96			
"Abrasive machining". Cylindrical ..	310	Air compressors. Installation of Wotan machines for operations on ..	642	Aluminium. Structural bonding of aluminium-strip continuous coating installation at Imperial Aluminium ..	785			
"Abrasive machining". Surface finish obtainable with ..	179	Air-conditioning installations for motor cars ..	1076, 1300	Amber Oil, Ltd.: Ambersil M54 silicone grease for protecting machinery ..	263			
Abrasive polishing wheel. Norton Bear-Tex ..	33	Production of the Frigidaire axial type compressor for ..	1076, 1300	American Air Filter Co. Inc. ..	87			
Abrasive-wheel cutting machine. Osmond type SM11 ..	260	Air Control Installations, Ltd.: "American" dust collector ..	87	American Motors: Automatic assembly ensures high quality of connecting rods ..	153			
Acbars, Ltd. ..	1214, 1318	Air freight service. E. M. B. die casting machine sent to U. S. A. by ..	837	Use of semi-automated equipment for assembling cylinder heads ..	411			
Accra-Blank shear. Lodge & Shipley ..	602	Air gauging. The Dimensionair differential system of ..	1263	American Tool Works Co.: "Economy" lathe with G. E. type 100 s punched-tape control ..	692			
Accumulator. Fawcett-Preston Mini-cushion ..	185	Air/O-Flow suction cleaner ..	969	Equipment for pre-setting tools in square turrets for numerically-controlled lathes ..	1053			
Accumulator. Greer-Mercier hydro-pneumatic, on Webster & Bennett boring and turning mill ..	372	Air-operated de-scaling unit. Cleco BI-ANB needle-type ..	811	Tape-controlled centre and engine lathes ..	527			
Accupin control system. G. E. C. ..	29	Air-operated equipment for the remote control of Kopp speed variator ..	975	Type 4025 lathe with G. E. Mark Century 102C continuous path control ..	692			
AccuraScope. Caledonian type 55 Profile Accurate Tools (Greens), Ltd.: ATAG equipment for grading motor car pistons ..	1084	Air-pressure regulator. Norgren precision ..	772	Ampex (G. B.), Ltd.: New factory ..	1007			
Accuratool automatic turret lathe ..	93, 699	Air valve. Martonair type S.786C ..	1394	Amplifier. "Maxam Power" Maxalog turbulence ..	610			
Acheson Colloids, Ltd.: New Emralon surface coatings ..	297	Airborne Instruments Laboratory Divn. of Cutler-Hammer: Application of laser interferometer in connection with machine tool development ..	1401	Analysis. critical path, Computer applied to ..	298			
Acheson Industries Inc. ..	298	Lasers. Interferometry equipment on Giddings & Lewis "jig borer" machine for checking accuracy of table positioning under numerical control ..	997	Analysis equipment. Honeywell type 9300 ..	1328			
Acme-Gridley 12-in. automatic dial control single-spindle chucking automatic ..	948	Airframe part. Use of Visigauge pulse-echo gauge for checking dimensions of integrally machined ..	374	Andrews Bros. (Bristol), Ltd.: New Merseyside factory ..	383			
Acme-Gridley 21-in. HSC-6 chucking automatic ..	1050	Airliner. Concord, Large Cramic tape-controlled drafting machine for preparing loft plates for the ..	581	Angle-measuring table. Russian type OKB-1465 induction-optical ..	875			
Acramatic 330 punched-tape control. Cintimatic 8-spindle turret drilling and milling machine with ..	1050	Airmec punched-tape control system on Wadkin type TH Mark 2 drilling machine ..	266	Anglo-African Machinery Co., Ltd.: Protecting machinery with Ambersil M54 silicone grease ..	263			
Acramatic 330 3-axis punched-tape control equipment on Headrill drilling, boring and milling machine. Cincinnati ..	995	Airtronics Instrument Laboratory Divn. of Size Control Co. Inchworm precision linear actuator ..	1053	Anglox locking joint ..	1394			
Actuator. Inchworm precision linear ..	1053	Alai-Set work-holding chucks ..	353	Angstromatic precision boring, facing and turning machine. H. & H. ..	999			
Actuator. Vactric rotary servo ..	765	Alcatel ..	1214, 1318	Angus, George, & Co., Ltd.: Maxiflex multi-swaged couplings ..	100			
Adam Machine Equipment, Ltd. ..	651							

	PAGE		PAGE		PAGE
Anocut Engineering Co.:		Ateliers de Mecanique du Centre:		Automatic Equipment, Ltd.:	
Large electro-chemical machining unit .. .. .	1122	Numetrol numerically-controlled high-precision facing and turning lathe ..	1213	Auteg type AD 20 dip-painting and stoving unit .. .. .	498
Annealing furnace. B.E.P. controlled-atmosphere bright ..	14	Atlas micro-manometers. New range of Atols Tool & Mold Corp.: ..	489	Combined spray booth and dipping tank .. .. .	1368
Antex, Ltd.:		Electrical discharge machining of die casting dies .. .. .	427	Automatic final gear inspection machine. "Illinois Tool Works" .. .. .	1000
Type G soldering iron .. .. .	419	Auradex gold plating process. PMD ..	10	Automatic flame cutting machines for continuous casting plant .. .. .	1275
De-soldering tool .. .. .	1145	Austin Motor Co., Ltd.:		Automatic foundry plant for Czechoslovakia .. .. .	614
Anthony, Luke, Ltd.:		Installation of Dawson cleaning machines .. .. .	1035	Automatic friction welding machine for transmission-shaft assemblies. Steelweld fully .. .. .	816
Fortis hydro-pneumatic cylinder ..	659	Auteg type AD 20 dip-painting and stoving unit .. .. .	498	Automatic grinder for sheet edges. Moon .. .. .	98
Anti-corrosion compounds .. .. .	367	Autodrill, Vero 18-spindle tape-controlled, for operations on valve spools ..	269	Automatic grinding installations. Extension to Hoffmann .. .. .	125
Anti-corrosion products. "Surface Treatments" .. .. .	68	Autodrill, Vero series 1000, with Ferranti Scope numerical control equipment .. .. .	1088	Automatic magazine bar feed unit. Brown & Ward .. .. .	1438
Anyizer attachment for grinding punches .. .. .	1319	Autogard tapping attachment. Tadco ..	547	Automatic measurement of scales by laser interferometry Machine for .. .. .	730, 780, 795
Appleby-Frodingham Steel Co.:		Autogas gas-fired furnace for holding and melting aluminium .. .. .	10	Automatic melting and holding furnace. Heatlock .. .. .	946
A century of ironmaking .. .. .	1118	Autol 200 melting and holding furnace. Heatlock .. .. .	946	Automatic. Motch & Merryweather type 21-VNC tape-controlled vertical-spindle chucking .. .. .	600
Apprentice school for Leeds-based companies of the 600 Group. New ..	724	Automated equipment, Highly, employed in manufacture of Frigidaire refrigerator cabinet doors .. ..	740	Automatic. New Britain No. 112 single-spindle .. .. .	1153
Araldite epoxy resin plates and patterns used in Moldmaster installation at Ford Motor Co. .. .. .	1287	Automated industrial drilling service ..	1066	Automatic notching press. Grimar ..	1093
Arboga Maskiner AB:		Automated, Semi- equipment for assembling cylinder heads .. ..	411	Automatic operation of machine tools of different types. Developments in Elliott sequence control equipment providing for .. .. .	548
Type BEP 308 twist drill grinder ..	99	Automatic. Acme-Gridley 2½-in. HSC-6 chucking .. .. .	1050	Automatic positioning system .. ..	805
Arc de-scaling arrangement .. .. .	520	Automatic assembly of dowels to sprockets .. .. .	820	Automatic Rockwell hardness tester. Esway fully .. .. .	830
Arc-Out tap eroder attachment to facilitate salvaging large components ..	979	Automatic assembly ensures high quality of connecting rods .. ..	153	Automatic and rotary transfer machine. Combined Swiss .. .. .	1110
Archdale, James, & Co., Ltd.:		Automatic assembly machine for steering arms. Renault .. .. .	316	Automatic sculpting machine. Hungarian .. .. .	1391
In-line transfer machines installed at BMC Longbridge .. .. .	250	Automatic bar feed grinding machine. M.S.O. type S-200 .. .. .	776	Automatic spraying machine. Binks-Bulows type L4103 .. .. .	417
No. 100 deep-hole boring machine ..	463	Automatic. Bar-fed, for stud production .. .. .	356, 507	Automatic taper rolling .. .. .	880
Supply of machine tools and equipment to Spanish diesel plant .. .. .	396	Automatic. Brown & Sharpe No. 2B single-spindle .. .. .	458	Automatic tool changing .. .. .	515
Armstrong-Blum Manfg. Co.:		Automatic. B.S.A. type 95N chucking, with numerical sequence control ..	453	Automatic tool changing. Cincinnati type ATC tape-controlled machining centre with facilities for .. ..	1000
Sure-Line automatic blade controller on Marvel vertical bandsawing machine .. .. .	1271	Automatic. B.S.A. No. 48 phase 2 single-spindle .. .. .	543	Automatic tool changing facilities on Edlund-Matic drilling, milling and boring machine .. .. .	1150
Arvin micro-positioner combined with Westinghouse laser welder .. .. .	1415	Automatic bandsaw blade controller. Sure-Line .. .. .	1271	Automatic tool changing. Kearney & Trecker Milwaukee-Matic series Eb tape-controlled machining centre with ..	695
Asea NSL 102 tape control system on Kipage vertical milling machine ..	1092	Automatic. Bullard Temple-Turn 2-spindle vertical chucking .. .. .	353, 1269	Automatic. Traub A 80 single-spindle ..	653
Ashdown Bros. & Co. (Engineers), Ltd.:		Automatic. C.V.A. No. 8 single-spindle, Deep rear-end and cross-drilling set-up on .. .. .	751	Automatic. Traub A 3F 125 3-spindle chucking .. .. .	454
Epoxy insulation for electrical machines .. .. .	75	Automatic centreless machine for turning stepped and profiled forms on shafts. Taber type 906-5 .. .. .	1157	Automatic tube cutting machine installation .. .. .	833
Asquith, William, Ltd.:		Automatic. Churchill CA9-10 chucking, set up for machining a cast iron coupling component .. .. .	88	Automatic turret lathe. Accuratool ..	93, 699
Centenary of foundation of company ..	273	Automatic circular division tester. Matrix Mark 3 high-speed .. ..	11	Automatic turret lathe. Habegger camless .. .. .	400
New 2HD numerically-controlled drilling and tapping machine .. ..	1227	Automatic cleaning and drying machines installed at Austin works. Dawson ..	1055	Automatic turret-lathe. Heinemann type DN 300, with G.E. Mark 100S continuous-path control .. ..	1216
2-spindle vertical borer with indexing worktable .. .. .	573	Automatic. Conomatic C6 2½-in. capacity multi-spindle .. .. .	594	Automatic. Turret unit for Traub A25 ..	769
Assembling automatic timers for Hoover Keymatic washing machines .. ..	116	Automatic control. DoALL bandsawing machine arranged for, from a line drawing by photo-electric tracing system .. .. .	603	Automatic ultrasonic testing equipment. Ultrasonoscope .. .. .	757
Assembling brake drums and wheel hubs. Gilman machine for .. .. .	982	Automatic corner-seam welding machine ..	747	Automatic. Unimat single-spindle ..	1006
Assembling cylinder heads. Semi-automated equipment for .. .. .	411	Automatic control of machine tools. Bullard Temple-Turn system for ..	353	Automatic vertical lathe. Menziken ..	193
Assembling rear-axle cross-members. An in-line transfer machine for ..	292	Automatic correction of alignment errors in machine tools .. ..	674	Automatic. Warner-Swasey Asquith 3AC, with numerical control ..	452
Assembly, Automatic, ensures high quality of connecting rods .. .. .	153	Automatic-cycle drilling machine. Aldellverken type U35/1A .. ..	897	Automatic. Warner & Swasey type OAB 1½-in. capacity single-spindle bar ..	599
Assembly and checking operations on typebars and segments for Hermes typewriters .. .. .	172	Automatic-cycle operation. Kearney & Trecker horizontal milling machine designed for .. .. .	694	Automatic. Warner & Swasey 3AC single-spindle chucking, Staging panel and function control board for ..	1151
Assembly of dowels to sprockets. Automatic .. .. .	820	Automatic dial control. Acme-Gridley 12-in. single-spindle chucking automatic with .. .. .	948	Automatic welding equipment for heat exchangers. Superheater .. ..	408
Assembly "easels" for electrical panels .. .. .	369			Automatic welding machine for reclaiming tractor components .. .. .	1154
Assembly machine, Renault automatic, for steering arms .. .. .	316			Automatic wire brushing machines. Special Tiki .. .. .	976
Assembly machine for vehicle brakes. Semi-automatic .. .. .	1311				
Assembly. Some applications of adhesives in .. .. .	171				
Assembly and testing arrangements for Cincinnati Powermatic machines ..	16				
Associated British Machine Tool Makers, Ltd. .. .. .	413				
Associated Electrical Industries, Ltd.:					
Plan-E-Trol continuous-path control system .. .. .	24				
Punched-tape digital control system on Grinston co-ordinate setting worktable .. .. .	43, 105				
Ataka & Co., Ltd.:					
Kashifuji KS-14 high production gear hobber .. .. .	85				

	PAGE
Automatic work-loading equipment.	
Schaudt type ERS cylindrical grinder with .....	534
Automatics. Components produced on Bullard Templa-Turn single- and 2-spindle vertical chucking ..	1289
Automatics. New CVA A-series single-spindle .....	128
Automatics. H. P. E. -Baird chucking ..	639
Automatics. Polish-built - BP-U sliding-head .....	362
Automatics. Some examples of set-ups on Petermann .....	146
Automatics. Traub B-series single-spindle .....	531
Automatics. Wickman single-spindle, now being built in John Lang works ..	440
"Automation. discontinuous", Dubied copying lathes arranged for ..	1425
Automation Exhibition. Low Cost ..	972
Autoport system of critical path analysis Avel, Ltd.:	298
Avelok fasteners for heavy duty ..	1374
Avery, W. & T., Ltd.:	
Furnace for universal testing machines	1327
Hardness standardizing machines ..	259
Type 6704 impact testing machine ..	771
Type 7110/DCJ testing machine installed for research into fine-blanking .....	1049
Type 7113 CSB universal testing machine .....	1041
Avey Machine Tool Co.:	
No. 350-HB horizontal turret-type drilling, boring and milling machine with tape control .....	998
6-spindle turret drilling machine with G. E. Mark II control .....	525
Axle cross-members. rear-, Zn in-line transfer machine for assembling ..	292
Axles. railway truck, Snyder transfer machine for operations on ..	255
Aylesbury Automation, Ltd.:	
Vibratory bowl feeding unit ..	349
Aylesbury Turned Parts (True Screws), Ltd.:	
	504

## B

B.C.A. off-set boring heads and clamping set .....	1103
BEA Engineering Department:	
Reconditioning electrical components by diamond turning .....	45
B.E.P. controlled-atmosphere bright annealing furnace .....	14
B.I.S.R.A. Laboratories, Battersea. Developments at .....	879
B.I.S.R.A. licence to Robertson's to build cantilever rolling mills ..	434
B. & K. Laboratories, Ltd.:	
Famuc-220 continuous-path control system .....	26
B.K.L. Alloys, Ltd.:	
Installation of special Tiki automatic wire brushing machines ..	976
B.P.S. Machinery & Spares Co., Ltd. ....	889, 1216
B.S.A. Forge, Ltd.:	
Installation of Fielding & Platt Dynapak high-energy-rate forming machine .....	1457
B.S.A. Sintered Components, Ltd.:	
Installation of Dorst 300-ton automatic dry powder pressing machine ..	1138
B.S.A. Tools, Ltd.:	
Type 98N checking automatic with numerical sequence control ..	453
No. 48 phase 2 single-spindle automatic .....	543
BSI statement of policy on metric screw threads .....	1226

BTR Industries, Ltd.:	
Plastlock adhesive for bonding brake and clutch linings ..	1398
BP-U sliding-head automatics. Polish-built .....	362
B. & R. Relays, Ltd.:	
Type KU10 UPT starter unit ..	296
B.X. Plastics, Ltd.:	
Components produced from nylon supplied by company ..	149
New polystyrene moulding materials ..	970
Backer, W.R.:	
Cylindrical "abrasive machining" ..	310
Badische Anilin & Soda Fabrik A.G.:	
Film: Ultramid .....	168
Baird, H. P. E., chucking automatics	638
Balancing equipment. Elitroly wheel	760
Balancing machines. Tinius Olsen semi-automatic crankshaft ..	199
Balding Engineering, Ltd.:	
Turret-type milling machines at Douglas exhibition ..	808
Bale-O-Matic furnace fired by fuel oil. Morgan .....	33
Balfour & Darwins, Ltd.:	
Pellet welding equipment ..	1329
Ball studs, MSO bar feed grinder set up for producing alloy steel, from the solid in one operation ..	777
Bamber Machine Tools, Ltd. ....	85
Bamford, J.C., (Excavators), Ltd.:	
Installation of Scharmann tape-controlled boring and milling machine .....	1229
Bandsaw blade controller. Sure-Line automatic .....	1271
Bandsaw blades. New Eclipse ..	547, 619
Bandsaw. DoALL Continental 2 Production Saw .....	604
Bandsaws. Starrett Hook-Tooth ..	35
Bandsawing machine arranged for automatic control from a line drawing by photo-electric tracing system. DoALL .....	603
Bandsawing machine. DoALL heavy-duty tilting-frame vertical-type ..	604
Bandsawing machine with Peer-Matic programme control system. Peerless .....	1268
Bar feed extension unit. Mercer capstan lathe .....	42
Bar feed grinding machine. M.S.O. type S-200 automatic .....	776
Bar feed unit. Brown & Ward automatic magazine .....	1438
Bar peeling machine. Large ..	299
Bar straightening and tube de-rodming machine. Bronx type BRO ..	1044
Bar turning machines. Kieserling & Albrecht WDH 0/30-50 centreless ..	463
Barber-Colman Co., U.S.A.:	
Wooden mock-up assists hob setting .....	234
Barber & Duffy, Ltd.:	
High-precision copy-turning with a Tymac Tracer attachment ..	989
Bardons & Oliver, Inc.:	
No. 35 cutting-off lathe set up with circular sawing attachment ..	1052
Barduct bushbars. Ring main system of, installed at I.C.I. Fibres ..	381
Barduct installation at works of Lesney Products .....	1117
Barker Machine Tools & Equipment, Ltd. ....	899
Barlow-Whitney, Ltd.:	
Exhibition of process heating equipment .....	1060
Barmatic Products, Ltd.:	
Deep rear-end and cross-drilling set-up on a C.V.A. auto ..	751
Barnes Drill Co.:	
T-18 Tri-Matic grinder with oscillating belt .....	801
Type 244 vertical honing machine ..	1270

Barnes Engineering Co.:	
Thermograph industrial infra-red camera .....	185
Barrel finishing machine. Vanco transportable .....	351
Barrel. New fully-immersed plating ..	300
Barrel zinc plating. Ionic double their capacity for .....	247
Barrus, E. P., (Concessionaires) Ltd.:	
Weld-Lite helmet lamp .....	645
Barton, H.K.:	
"Unit dies" for die casting ..	940
Batch work. Possibilities of multi-operation set-ups for .....	1019
Batch work. Production control, work handling and communications systems for .....	684
Bausch & Lomb Inc.:	
Ruling master diffraction gratings	302
Bear-Tex abrasive flap wheel ..	92
Bear-Tex abrasive polishing wheel. Norton .....	33
Beard & Fitch, Ltd.:	
Small reduction gearbox .....	265
Bearing, air-, spindles. Developments in connection with Westwind ..	188
Bearing arrangement, Tailstock, on a large lathe .....	582
Bearing ball inspection machine. Russian type 402 .....	876
Bearing, ball, races. Extension to Hoffmann installation for automatically grinding .....	125
Bearing. An interface restrictor hydrostatic .....	1095
Bearing rings. grinding machines for, Novamatic internal .....	475
Bearing for Sendzimir rolling mill. Set-up on Swift lathe for machining outer ring of support .....	783
Bearings for electron beam welder tables. Roundway .....	1396
Bearings. Extended range of Hoffmann tapered roller .....	377
Bearings. Hydrostatic, for a lathe headstock .....	1392
Beaver turret-type milling machine. Close-up view of table of ..	806
Bed unit for use in construction of transfer machines. Polish-built ..	365
Bedford, James, & Co. (Hullfax) Ltd.:	
New steel workshop equipment ..	1422
Beech, Austin S., & Co., Ltd.:	
Magnetic proximity detector switch	1207
Beetle variable-speed tractor unit for welding and cutting torches. Interlas .....	896
Behr-Manning Divn., Norton International Inc.:	
Bear-Tex abrasive flap wheel ..	92
Bear-Tex abrasive polishing wheel ..	33
Behrens, Hans .....	1317
Belford (Machine Tools), Ltd. ....	899
Bell & Howell, Ltd., Consolidated Vacuum Divn. ....	1225
Belliss & Morcom, Ltd.:	
Installation of two Wotan machines for production of air compressors ..	642
Bellows Valvair, Ltd.:	
Drilling machine feed unit ..	269
Bench centres. New Instrumetron low-height .....	196
Bending press. Large roller ..	127
Bending rolls. Kingsland drop-end power .....	256
Bendix Corporation:	
Dynapath equipment for continuous-path machining and point-to-point positioning on Versa-Tronic vertical boring and milling machine ..	15
Dynapath 20 continuous-path control system .....	25
Micrometrical Divn.:	
Proffocorder (R) measuring machine	1042
Benton Engineering Co., Ltd.:	
Willock self-locking rivet bush ..	321



	PAGE		PAGE		PAGE
Berridge, I.L., & Co., Ltd.:		Boring, drilling and milling machine.		Boring and turning mill with Mark	
Producing components for Herbert		Giddings & Lewis H-type horizontal	585	Century control. Gray series	
capstan and other lathes .. ..	1020	Boring and facing head. Kennametal ..	983	60 vertical .. .. .	594
Berthies vertical boring and turning		Boring, facing and milling machine.		Borrowing and leasing facilities for	
mill installed by Darlington Forge ..	1149	H. & H. Angstromatic precision ..	999	the smaller firm .. .. .	928
Beryllium Corporation:		Boring fixture for pipe bosses ..	1113	Bosses. A boring fixture for pipe ..	1113
Berylico 33-25 free-machining		Boring heads. B.C.A. off-set ..	1103	Bostitch, Inc., U.S.A.:	
beryllium copper .. .. .	1197	Boring heads and setting units for		Metal stitching machine .. ..	718
Besco-Truicut Mark-2 type 8/125		horizontal borer. Special ..	825	Bostitch London, Ltd. .. ..	718
precision guillotine. Edwards ..	100	Boring machine. Archdale No. 100		Bowers, T., & Co. (Toolmakers), Ltd.:	
Beta 3-d measuring and marking-out		deep-hole .. .. .	463	Internal micrometers and their	
machine .. .. .	778	Boring machine. Asquith twin-spindle	575	production .. .. .	421
Bextrene polystyrene moulding		Boring machine. Collet & Engelhard		Boxford Machine Tools, Ltd.:	
materials .. .. .	970	Minor horizontal .. .. .	464	Vari-speed lathe .. .. .	462
Bi-metal for electrical contacts.		Boring machine. Ex-Cell-O angular		Boydolt self-locking screw and nut	
Elkonite-copper .. .. .	650	cylinder block .. .. .	663	assembly. Calfax .. .. .	720
Billet detector. L.D.E.P. photo-		Boring machine. Ex-Cell-O type 992		Bracket. Vero circuit board mounting	1220
electric .. .. .	360	4-axis Numer-a-Trol precision ..	592	Bradley & Co., Ltd.:	
Binks-Bullows, Ltd.:		Boring machine. Ex-Cell-O type 992		Spacesaver storage installation at	
Type L4103 automatic spraying		Numer-a-Trol precision horizontal,		Vauchall Motors .. .. .	439
machine .. .. .	417	Close-up view of spindle head on ..	1156	Brake discs. Rowland duplex grinder	
Birfield Extrusions, Ltd.:		Boring machine. fine-, H.P.E.		for .. .. .	1139
Use of transfer feed unit for cold		unit construction .. .. .	529	Brake drums, Machining, on Gisholt	
extrusion presses .. .. .	198	Boring machine with General Electric		Simplimatic chucking lathes. ..	930
Blacker Patent Products:		103C continuous-path control.		Brake drums. Micromatic Hydrohoner	
Hexplugs .. .. .	988	Gray 660 FC 6-in. spindle		machine for micro-honing .. ..	415
Blade controller. Sure-Line automatic		horizontal .. .. .	596	Brake drums and wheel hubs.	
bandsaw .. .. .	1271	Boring machine. Giddings & Lewis,		assembling, Gilman machine for ..	982
Blanking, fine-, presses. SMG		with Bunker Ramo point-to-point		Brakes. Airflex clutches and ..	290
large-capacity .. .. .	562	positioning .. .. .	525	Brakes. Semi-automatic assembly	
Blanking, fine-, Research into ..	1049	Boring machine. Large Ikegai hori-		machine for vehicle .. .. .	1311
Blast-cleaning machines. New Guyson	97	zontal .. .. .	1379	Braking system. A new machine	
Bliss, E.W., Co., U.S.A.:		Boring machine. Rocco type AP.88		spindle .. .. .	1036
Power-Micro equipment for accurate		horizontal .. .. .	454	Brass component. Deep rear-end and	
adjustment of roll feed stroke length		Boring machine. Skoda vertical turning		cross-drilling set-up on a C.V.A.	
while press is in operation ..	1057	and, of unusual design .. ..	554, 622	auto for producing a .. .. .	751
Bliss, E.W., (England), Ltd. ..	1057	Boring machines. G & L-Fraser		Brass stamping press with sub-press.	
Boards for electronic equipment.		horizontal, Machining large		Wilkins & Mitchell type E30HBI-10	539
Fine pitch .. .. .	617	castings on .. .. .	822	Brauer, F., Ltd.:	
Boehringer, Gebr., G.m.b.H.:		Boring machines. H.P.E. fine ..	640	Speedo TC 71 toggle clamps ..	1224
Hydrokop-Universal out-of-round		Boring machine. Installation of three		Bray Construction, Ltd.:	
copying attachment .. .. .	1372	Richards, in the makers' works ..	216	Gearbox components being lapped	
Optical tool pre-setting unit to		Boring mill, Graffenstaden type		on Lapmaster machine .. ..	1008
facilitate rapid setting-up of		TVFA 121 H vertical, with G.E.		Brazing, Dip, ensures high-quality	
V800 lathe .. .. .	1371	Mark 100S continuous-path control..	1214	waveguides .. .. .	1325
Special thread whirling machine ..	1373	Boring mill. Large Japanese vertical	921	Brazing machine. Dusseldorf Duromat	
2-spindle grinding head for use on		Boring mill, Morando type KL 14		induction hardening and .. ..	486
planing machine .. .. .	1370	vertical, with programme control ..	651	Bredin, Harold W.:	
Type V800 numerically-controlled		Boring, milling and drilling machine		The stationary-spindle process	
lathe .. .. .	1371	with 2-axis Mark Century numerical		for swaging parts of various cross	
Visit from British engineers ..	1062	control. Bullard 5-in. Dynamill		sections .. .. .	1380
Wooden model of planing machine		horizontal .. .. .	590	Bridgeport machine adapted for	
incorporating a number of improve-		Boring, milling and drilling machine.		milling a large bore .. .. .	378
ments which is to be added to range	1369	Cincinnati Gilbert series C		Bridgeport machine. Continuous	
Boeing Company:		table-type .. .. .	1388	milling on a .. .. .	330
Large machine tools for operations		Boring and milling machine. Lucas		Brierley, Z., Ltd.:	
on pressure vessel sections ..	71	Versa-Tronic numerically-		Rotacone twist drill grinder ..	478
Light beam system for aligning large		controlled vertical .. .. .	15	Brightside Foundry & Engng. Co., Ltd.:	
jig components .. .. .	645	Boring and milling machine. Scharmann		Licence to build Sutton extrusion	
Optical system for measuring		tape-controlled .. .. .	1229	presses .. .. .	382
surface contours .. .. .	1176	Boring and milling machine. Scharmann		Brightside Heating & Engineering	
Selection of screw sizes for ease		type FB 50/75 horizontal, with		Co., Ltd.:	
of insertion .. .. .	1116	Phillips numerical control equipment	1218	New system of industrial radiant	
3-dimensional optical square ..	294	Boring and milling machines, installation		heating .. .. .	979
Use of large aluminium alloy forgings		of two Wotan, at Bellis & Morcom		Bristol Siddeley Engines, Ltd.:	
for Saturn V rocket .. .. .	209	works .. .. .	642	Electron beam welding as a	
Bohle, Reinhard, KG.:		Boring, milling and semi-jig boring		production process .. .. .	796, 852
Type FWR 85/5555/NC 8-spindle		machine. Cornac Stabimajor		British Association of Machine Tool	
turret-head horizontal milling		horizontal tape-controlled .. ..	1435	Merchants:	
machine with Brown-Boveri point-		Boring and surfacing machine, Kearns		Retirement of Mr. H.E. Jones,	
to-point numerical control system ..	889	type 724P horizontal milling ..	325	secretary .. .. .	1121
Boma Engineering (Bilston), Ltd.:		Boring and turning machine. New		Annual general meeting .. ..	1288, 1351
Centri-Column rotary transfer		Britain type 66 precision contour ..	1266	British Brown-Boveri, Ltd.:	
machine .. .. .	869	Boring and turning mill installed by		Electro-hydraulic thrusters ..	87
Bonding of aluminium. Diffusion ..	355	Darlington Forge. Berthies		See also .. .. .	412
Bonding of aluminium. Structural ..	40	vertical .. .. .	1149	British Electric Conduit Manfr.:	
Bonding brake and clutch linings.		Boring or trepanning accurately spaced		Film: Conduits of Steel .. ..	276
Plastilock adhesive for .. ..	1398	and sized holes at one operation.		British Furnaces, Ltd.:	
Bonding stator laminations. Evo-Stik		Drillmation Bore-Pann machine		18-in. vacuum unit and furnace	
adhesive for .. .. .	817	for .. .. .	996	element .. .. .	866
Bore-Matic. Head type 251-A vertical		Boring, turning and grinding, 2-axis,		British Gear Manufacturers Association:	
bore, milling a large, Bridgeport		and 3-axis milling operations. Ex-		Gear cutting tools .. .. .	752, 862
machine adapted for .. .. .	378	Cell-O type 922 Numer-a-Trol		British Indicators (Sales), Ltd.:	
Bore-Pann machine. Drillmation ..	996	machine for .. .. .	591	New premises .. .. .	333
Boring bar. Warner & Swasey Fine-					
Adjust .. .. .	1388				

	PAGE		PAGE		PAGE
British Iron and Steel Research Association: Developments at the Battersea laboratories .. .. .	879	Buick cars. Gilman machine for assembling brake drums and wheel hubs for .. .. .	982	Calibrating service. EST master setting ring .. .. .	435
British Manufacture & Research Co., Ltd.: Marcotron variable speed drive controller for induction motors .. .. .	894	Bullard, D.J., M.Sc. Tech.: A projected experimental numerical control system .. .. .	131	Cam feed unit head. Singer .. .. .	968
Vimarc vibrator motor .. .. .	894	Bullard Co.: 5-in. Dynamill horizontal boring, milling and drilling machine .. .. .	589	Cam profile measuring machine with automatic print-out. Hilger-Watts .. .. .	1332
British Motor Corporation: Installation of Archdale transfer machines for operations on transmission casings for the 1800 car .. .. .	250	46-in. Dynatrol vertical turning and boring mill .. .. .	589	Camera parts. Die cast .. .. .	205
British Oxygen Co., Ltd.: New colour films .. .. .	52	Forms produced on Templa-Turn single-spindle chucking automatic .. .. .	1269	Camera. Thermograph industrial infra-red .. .. .	185
British Power Press Manufacturers Association. New officers for .. .. .	1343	Set-up on Templa-Turn 2-spindle vertical chucking machine .. .. .	1269	Camshaft grinding machine. Russian-built Kharkov .. .. .	80
British Standards Institution: Statement of policy on metric screw threads .. .. .	1226	Templa-Turn control system on 2-spindle vertical chucking automatic .. .. .	353	Canning, W., & Co., Ltd.: Electro-plating process for ABS plastics .. .. .	1398
Broaching and keyseating machines. Frömag .. .. .	405	Bunker Ramo Corp.: 3100 continuous-path control system on Ekstrom-Carlson Rout-O-Mill .. .. .	696	New indexing system incorporating electromagnetic clutches and brakes .. .. .	939
Broaching machine. Lapointe universal 5-ton vertical .. .. .	1387	3100 continuous-path control system on Hillery E40-TCC vertical spindle machine .. .. .	1268	Programme-controlled barrel zinc-plating plant installed at Ionic Plating Co. .. .. .	247
Broaching machine. Red Ring 25-ton VBA pot .. .. .	1052	Continuous-path numerical control equipment on Warner & Swasey turret lathe .. .. .	152	Silicon rectifier units .. .. .	1197
Bronx Engineering Co., Ltd.: Levelling machine for light-gauge polished aluminum sheet .. .. .	96	Burgmaster Corp.: Type 20T-SH milling, drilling, boring and tapping machine with numerical control .. .. .	951	Surface Treatments, Ltd. Divn. .. .. .	68
7-roll levelling machine .. .. .	664	Type 3 BHT-SH-TC travelling-column turret-type drilling, boring, tapping and milling machine with G.E. Mark Century control .. .. .	1054	See also .. .. .	130
Type BRO bar straightening and tube de-rodming machine .. .. .	1044	Burgmaster type 3 BHTL-SH tape-controlled turret drilling machine. Ex-Cell-O .. .. .	470	Cantilever rolling mills. Robertsons to build .. .. .	434
Brock Tools, Ltd.: Installation of Wickman optical profile grinders .. .. .	1338	Burgsmüller whirling attachment on Boehringer special-purpose machine .. .. .	1373	Caps Jeffree diazo enlargers. Ozalid to market .. .. .	332
Brookes (Oldbury), Ltd.: Automatic tube cutting equipment .. .. .	833	Burkinshaw, W.A., B.Sc.: VISA teaching aid for production planning and control .. .. .	1119	Carbide, Ferro-Tic C machinable, for carton dies .. .. .	580
Browell's Partnership, Ltd.: Lucy Switch pressure switch .. .. .	44	Burnishing operation. Roller, carried out under tape control on Sundstrand Omnimil .. .. .	526	Carbide lathe tool for grooving operations. All- .. .. .	1039
Brown-Boveri & Co., Ltd.: Equipment for continuous-path control in three axes on Hessapp die milling machine .. .. .	777	Burnley Engineering Products, Ltd.: Controlled-atmosphere bright annealing furnace .. .. .	14	Carbide punches and dies. Diamond finishing of .. .. .	313
Point-to-point numerical control system on Reinhard Bohle 8-spindle turret-head horizontal milling machine .. .. .	889	Burton, Griffiths & Co., Ltd. .. .. .	454, 543, 605, 948, 1050, 1388	Carbide-tipped reamers. "Drill Service" .. .. .	262
Type AW programme control equipment on Werner milling machine .. .. .	1090	Busbars, Ring main system of Barduct, installed at I.C.I. Fibres .. .. .	381	Carbide tooling. New Sandvik .. .. .	559
See also .. .. .	412	Bush. Willock self-locking rivet .. .. .	321	Carbide tools. Chinese sintered .. .. .	762
Broom & Wade Ltd. open additional compressor works .. .. .	1456			Carborundum Co., Ltd.: Extended range of products of the company .. .. .	922
Brown & Sharpe, Ltd.: No. 2B single-spindle automatic .. .. .	458			Cardew, Alexander, Ltd. .. .. .	430, 487
Brown & Sharp Manig. Co. U.S.A.: Hydrotype type 224 drilling, tapping and boring machine .. .. .	586			Carlton Machine Tool Co.: Type 4A radial drilling machine set up for cutting a 10 1/2 diameter hole in steel block .. .. .	1057
Type 1018 automatic cycle cylindrical grinding machine .. .. .	586			Carton dies. Ferro-Tic C machinable carbide for .. .. .	580
Type 1018 Microstatic automatic cycle cylindrical grinder with automatic loading equipment for handling diesel engine pistons .. .. .	997			Cartridge boring tools .. .. .	287
Brown & Ward (Tools), Ltd.: Automatic magazine bar feed unit .. .. .	1438			Cartridge cases. Plastics extruding machine for .. .. .	1225
Brushing machine. Special Tiki automatic wire .. .. .	978			Cartridges. shot-gun, Chappuis transfer press for producing one-piece steel heads for .. .. .	612
Brussels. 9th European Machine Tool Exhibition at: Lord Snow's visit .. .. .	620			Cartridges. throw-away tip. Toolholders for use with .. .. .	609
Machine tool exhibits 325, 327, 452, 530, 651, 773, 887, 1087, 1213, 1313, 1431 .. .. .				Carver & Co. (Engineers), Ltd.: Tee-Slot clamp .. .. .	1223
Bryant Symons lathe. Reconditioning electrical components by diamond turning on a .. .. .	45			Cast iron components. flanged, Wadkin type TH Mark 2 tape-controlled machine set up for drilling .. .. .	266
Buck & Hickman, Ltd. 355, 458, 585, 589, 692, 997, 1053, 1055, 1269, 1385 .. .. .				Cast iron coupling component. Churchill chucking automatic set up for machining a .. .. .	88
Buhler type H-400-D cold-chamber die casting machine .. .. .	536			Cast iron, Ductile - probable pattern of development .. .. .	1274
Buhr Machine Tool Co., Ltd.: Economatic in-line transfer machine for cylinder heads .. .. .	698			Casting for slotting machine column. Meehanite metal .. .. .	376
Transfer machines for operations on Ford cylinder blocks .. .. .	1284			Castings. Machining large, on G & L-Fraser horizontal borers .. .. .	822
				Castings. On-site impregnation of .. .. .	829
				Castings in the production of the Skoda 1000MB car. Light alloy .. .. .	1349
				Castmatic die casting machines. New Trulzi .. .. .	430
				Catmur Machine Tool Corp., Ltd.: British-built Moore No. 2 jig grinder .. .. .	1168
				Demonstrations of Moore machines .. .. .	1166
				See also .. .. .	596, 1152, 1387
				Centre S. New Instrumetron low-height bench .. .. .	196
				Centri-Column machine. The Boma .. .. .	869
				Centring machine. Russian semi-automatic milling and .. .. .	76
				Centuramic centreless grinding machine. Cincinnati .. .. .	540
				Ceramic cutting tools. Carborundum .. .. .	922
				Ceramic moulding process. Typical castings produced by the Unicast .. .. .	725, 1123

	PAGE		PAGE		PAGE
Chain and Drive Spray - a new Rocol aerosol lubricant .. . . .	932	Churchill, Charles, Group:		Clamp. Carver Tee-Slot .. . . .	1223
Chambers, Roy, Ltd. .. . . .	719	Applied Research and Development Divn.:		Clamp & Jack work-holding equipment .. . . .	350
Chamfer milling and grinding machine. Christen type KFS .. . . .	538	Churchill-Redman numerically-controlled lathe .. . . .	45	Clamps. Brauer-Speetogoggle TC 71 .. . . .	1224
Changeomatic press line in the Ford factory at Cologne. USI .. . . .	1003	Demonstration of application of Cutler-Hammer laser interferometer in connection with machine tool development .. . . .	1401	Clamps and vices. Thienes work-holding	295
Checking the dimensions of an integrally machined airframe part. Visalgauge pulse-echo gauge for .. . . .	374	New crown, spherical and taper gear hobbing system .. . . .	933	Clamping equipment. Use of PowRlock, reduces time of milling operation .. . . .	893
Checking operations, Assembly and, on typebars and segments for Hermes typewriters .. . . .	172	Churchill, Charles H., Ltd. 88, 146, 467, 475, 540, 949, 1000, 1050, 1389, 1392		Clamping set. B. C. A. .. . . .	1103
Checking pitch of ball screws. Rotax comparator for .. . . .	915	Churchill Gear Machines, Ltd.:		Clarifier. New Philips magnetic coolant	652
Checking rotary tables. Optical set-ups for .. . . .	518	Hobbing machines with variable feed-rates for cutting wormwheels .. . . .	359	Clarifying, coolant, installation at Rolls-Royce. Alfa-Laval TurboMatic .. . . .	499
Checking tooth spacing. Fellows No. 8 T. I. M. instrument for .. . . .	608	New crown, spherical and taper gear hobbing system .. . . .	933	Clarke, Chapman & Co., Ltd.:	
Check valves. Ellison hydraulic .. . . .	825	N. E. Churchill Divn.:		Newly-formed Electronics Division .. . . .	436
Checking accuracy of table positioning under numerical control. Giddings & Lewis "jig borer" machine with Cutler-Hammer laser interferometer equipment for .. . . .	997	Type CA9-10 chucking automatic set up for machining a cast iron coupling component .. . . .	88	Clarkson (Engineers), Ltd.:	
Chem-Mark, Ltd.:		Churchill, J. J., Ltd.:		Film: The Clarkson Story .. . . .	1401
Electro-chemical marking equipment	727	Clamp & Jack work-holding equipment	350	Throw-away milling cutters in metric sizes .. . . .	680
Chemolimpex .. . . .	1391	Range of pneumatic control valves .. . . .	1120	Clarkson Transmatic electric control system on Waterbury Farrel transfer press .. . . .	1002
Chicago Machine Tool Show .. . . .	583, 615, 689, 948, 1050, 1150, 1266, 1385	Churchill Machine Tool Co., Ltd.:		Clayton Dewandre, Ltd.:	
China National Machinery Import & Export Corp. .. . . .	762	Crankshaft journal grinder .. . . .	756	Clayton-Skill extended-surface tubes	994
Chinese sintered carbide tools .. . . .	762	Types TWB and TWR roll grinders .. . . .	758	Cleener. Air-O-Flow suction .. . . .	821
Chopping machine. John Marshall mobile scrap .. . . .	23	Churchill, N. E., Divn. of Churchill Gear Machines, Ltd.:		Cleener. "Progress Universal" floor .. . . .	306
Christen type KFS chamfer milling and grinding machine .. . . .	538	Type C49-10 chucking automatic set up for machining a cast iron coupling component .. . . .	88	Cleener. Sheffield Super-Jet wheel .. . . .	689
Chromalloy Corporation:		Churchill-Redman, Ltd.:		Cleener. Spectra Spray-Clene cold .. . . .	927
Sintercast Divn.:		New office block .. . . .	955	Clearing, blast-, machines. New Guyson	97
Ferro-Tic notching punches .. . . .	315	Numerically-controlled P5 lathe .. . . .	45, 327	Cleaning machines installed at Austin works. Dawson .. . . .	1035
Chrysler Airtemp, Ltd.:		Programming the P5 numerically-controlled lathe .. . . .	826	Cleaning unit. Elliott-Automation	
Temperature control unit .. . . .	1276	Cinutes, Fab-Tec, on Lees-Bradner gear hobber .. . . .	543	ultrasonic .. . . .	750
Chrysler-Cummins, Ltd.:		Ciba (A. R. L.), Ltd.:		Cleaning unit. Specially-built	
Factory at Darlington for 30,000 diesel engines per year .. . . .	156	Araldite plates and patterns for Moldmaster installation at Ford Motor Co. .. . . .	1287	ultrasonic .. . . .	371, 510
Interesting link-line for diesel cylinder liners .. . . .	572	Cincinnati Gilbert Machine Tool Co.:		Cleaning unit. Typical general-purpose	
Installation of Buhr Economat in-line transfer machine for cylinder heads	698	Series C table-type horizontal boring, milling and drilling machine .. . . .	1388	ultrasonic .. . . .	370
Chrysler Motors, Ltd.:		Cincinnati Filmatic cylindrical grinder .. . . .	90	Cleco Air Tools:	
Chucking automatic. Acme-Gridley 2 1/2-in. HSC-6 .. . . .	1050	Cincinnati Lathe & Tool Co.:		BI-ANB needle-type de-scaling unit	811
Chuckling automatic. Acme-Gridley 12-in. single-spindle, with automatic dial control .. . . .	948	Cintimatic 8-spindle turret drilling and milling machine with Acramatic 330 punched-tape control .. . . .	1050	Type 500 hand grinding unit .. . . .	187
Chuckling automatic. Bullard Temple-Turn 2-spindle vertical .. . . .	353	Cincinnati Milling Machine Co., U.S.A.:		Cleerue Weldguard .. . . .	1094
Chuckling automatic. Churchill type CA9-10 set up for machining a cast iron coupling component .. . . .	88	Acramatic 330 3-axis punched tape control on Headrill type 2053 drilling, boring and milling machine .. . . .	995	Clutch and final drive housing die castings for French car .. . . .	709
Chuckling automatic. Match-Merryweather type 21-VNC tape-controlled vertical-spindle .. . . .	600	CIM-X "machining centre" 30-in. bridge-type profile milling machine with 3-axis numerical control 10- by 18-in. "straight" plunge grinder Type ATC tape-controlled machining centre .. . . .	949, 1389, 1000	Clutches and brakes. Airflex .. . . .	290
Chuckling automatic. New Britain No. 112 single-spindle .. . . .	1153	Telematic III control equipment on Springfield lathe .. . . .	953	Clutches, Sprag, for indexing, over-running and back-stopping .. . . .	322
Chuckling automatic with numerical sequence control. B. S. A. type 95N .. . . .	453	Cincinnati Milling Machines, Ltd.:		Co-ordinate drilling and boring machine. Torshalla Holmaster .. . . .	887
Chuckling automatic. Staging panel and function control board for Warner & Swasey SAC single-spindle .. . . .	1151	Assembly and testing arrangements for Powermatic machines .. . . .	16	Co-ordinate drilling machine. Kolb numerically-controlled .. . . .	466
Chuckling automatic. Traub A 3F 125 3-spindle .. . . .	454	Assembly "easels" for electrical panels .. . . .	369	Co-ordinate positioning equipment. Ferranti Scope tape-controlled .. . . .	481
Chuckling automatics. H. P. E. - Baird	638	Cinedo milling machines .. . . .	467	Co-ordinate setting drilling machine. Middlesex NC100 Speedrill tape-controlled .. . . .	936
Chuckling lathe. Monarch type 220N/CC tape-controlled .. . . .	1386	Cincinnati-Nederland N.V.:		Co-ordinate setting single-spindle drilling, tapping and reaming machines. Wadkin type TH .. . . .	450
Chuckling lathes. Gisholt Simplimatic, Machining brake drums on .. . . .	930	Centuramic centreless grinder .. . . .	540	Co-ordinate setting table. Grimston-A. E. I. tape-controlled .. . . .	49, 105
Chuckling machine. Morando type CM 12 12-spindle vertical .. . . .	532	Filmatic TwinGrip centreless grinding machines .. . . .	475	Coating installation, Aluminium-strip continuous, at Imperial Aluminium Co. .. . . .	784
Chuckling machines. Forms produced and set up on Bullard Temple-Turn single and double-spindle .. . . .	1269	Cinedo milling machines. Cincinnati .. . . .	467	Coating system. Pitan stainless steel .. . . .	1064
		Cintimatic 8-spindle turret drilling and milling machine with Acramatic punched-tape control .. . . .	1050	Coatings. New Emralon surface .. . . .	297
		Circuit board mounting bracket. Vero .. . . .	1220	Cohen, George, Machinery, Ltd.:	
		Circuit boards. Air-bearing drill for .. . . .	191	Collaway nylon coiled hose .. . . .	1396
		Circuit boards. Zagar-Dex 288-spindle machine for drilling .. . . .	1046	Coin blank handling equipment at the Royal Mint. G. E. C. .. . . .	1258
		Circuit diagrams produced under tape control .. . . .	1144	Coinmaster No. 2 minting press. H. M. E. .. . . .	1093
		Circular division tester. Matrix Mark 3 high-speed automatic .. . . .	11	Colchester Lathe Co., Ltd.:	
				Chipmaster lathe fitted with Tymac Tracer hydraulic copying attachment	909
				Legend plate for Mascot 1600 centre lathe .. . . .	1048
				New Mascot 1600 centre lathe .. . . .	834
				Visit from Head of Machine Tool Unit of Ministry of Technology .. . . .	158
				Cold-extrusion line for producing five sizes of gudgeon pins. Automated .. . . .	36
				Cold extrusion presses. Transfer feed unit for .. . . .	198
				Cold extrusion punches. Steels for .. . . .	22
				Cold forming press. Hadfields 150-ton	726
				Cold riveting equipment. Hydraulically-operated .. . . .	720
				Cold saw. Trennjaeger .. . . .	349

	PAGE		PAGE		PAGE
Cold sawing machine. Trennjaeger		Continuous-path control system, Bunker-		Control equipment, Phillips, on Scharmann	
Variant NE 250 transportable ..	1221	Ramo 3100, on Hilmyer type E40-TCC		vertical boring and milling machine	1218
Cole, Wardlaw & Co., Ltd. ....	415	vertical spindle machine ..	1268	Control equipment. Sperry servo ..	972
College of Aeronautics, Cranfield:		Continuous-path machining operations,		Control equipment. Triet-Sauter heating	
Calculator for use with coverage		Components produced by, with		and humidity ..	425
analysis technique ..	1045	Ferranti equipment on Hayes Tape-		Control. Mark Century, Gray series 60	
Open Days ..	264	master and Tracemaster machines ..	1219	vertical boring and turning mill with	594
Collet & Engelhard Minor horizontal		Continuous-path numerical control		Control, Nickols plugboard-type	
boring machine ..	464	equipment for machine tools. Olivetti	766	programme, on Accuratool turret	
Colmonoy type S100 Fuselwelder ..	1034	Continuous-path numerical control		lathe ..	93, 699
Commercial Aire type CA-200 air heater.		system on Heidenreich & Harbeck		Control. numerical, "American Tool	
PowRmatic ..	1424	lathe. G. E. Mark Century 100S ..	1370	Works" square tool turret for lathes	
Communication. The importance of, in		Continuous-path tape control systems.		with ..	1053
production departments ..	339, 505	Survey of currently-available ..	24	Control. Numerical, on Brown & Sharpe	
Communications systems, Production		Continuous-path turning, boring and		machines ..	586
control, work-handling and for batch		facing. Lodge & Shipley type 2013 AVS		Control. numerical, Bullard 5-in.	
work ..	684	lathe with G. E. Mark 100S control for	601	Dynamill horizontal boring, milling	
Commutator motors. Newman variable-		Contour boring, turning and grinding,		and drilling machine with Mark Century	
speed ..	1281	Ex-Cell-O type 922 Numera-Trol		2-axis ..	590
Compac equipment for gauging and		machine for 2-axis, and 3-axis milling		Control. numerical, Bullard 46-in.	
sorting manually-loaded parts ..	1222	operations ..	591	Dynatrol vertical turning and boring	
Compagnie Européenne d'Automatisme		Contour boring and turning machine. New		mill with Renwell ..	590
Electronique ..	153	Britain type 66 precision ..	1266	Control. numerical, Burgmaster type	
Comparator for checking pitch of ball		Contour milling and die sinking machine.		207-SH milling, drilling, boring and	
screws. Rotax ..	915	Giddings & Lewis DIMIL 3-axis ..	584	tapping machine with ..	951
Comparator. Federal 136B-3		Contour projector with 2-axis Vu-point		Control. numerical, Cincinnati 30-in.	
electronimaster ..	435	position display equipment. Ex-Cell-O		bridge-type profile milling machine	
Compressed air equipment. Norgren		type 30-826 ..	593	with 3-axis ..	949
lubrication and ..	658	Contour and taper machining. Gray series		Control. Numerical, for centre lathes ..	571
Compressor. Howden large-capacity		60 vertical boring and turning mill with		Control. numerical, Churchill-Redman	
screw ..	86	Mark Century control for ..	594	P5 lathe with, Programming the ..	826
Compressor. Production of the		Contour turning and milling machine for		Control. numerical, Churchill-Redman	
Frigidaire axial type ..	1076, 1300	Boeing. Froriep ..	71	P5 lathe with ..	45, 327
Compressors. air, Installation of Wotan		Contouring. Continuous-path ..	526	Control. Numerical, for die sinking ..	395
machines for operations on ..	642	Contraves A. G.:		Control. numerical, Drilmaton Bore-	
Computer applied to critical path		Tape control equipment on Henschel		Pann machine arranged for automatic	
analysis ..	298	type F 081 plano-milling machine ..	1088	positioning under ..	997
Computer design of machine tools.		Type G Multiswitch ..	23	Control. numerical, Economics of	
M. I. T. R. A. research to facilitate ..	104	Control. automatic dial, Acme-Gridley		machines with ..	739, 900
Computer installed in Central Ship-		12-in. single-spindle chucking		Control. numerical, Edlund-Matic type	
building Design Office, Gdansk.		automatic with ..	948	2NL drilling, milling and boring	
Elliott 803 ..	618	Control, automatic, DoALL bandsawing		machine with ..	1150
Computers, Application of, to research	881	machine arranged for, from a line		Control, numerical, equipment	
Computers. English Electric System 4	848	drawing by photo-electric tracing		developments. Grundig ..	537
Context, Ltd.:		system ..	603	Control, numerical, equipment, Ferranti	
Fractional horse-power electric		Control board for Warner & Swasey 3AC		Scope 200 series, on Vero Autodrill	1088
motors ..	320	single-spindle chucking automatic.		Control, numerical, equipment, G. E.	
Concord airliner engines. Ultrasonoscope		Staging panel and function ..	1151	Mark Century 100S continuous-path,	
automatic testing equipment for		Control boards, Le Pla tool, and		on Heidenreich & Harbeck lathe ..	1370
turbine discs for ..	757	associated equipment ..	242	Control, numerical, equipment, on	
Condensers for Frigidaire refrigerators.		Control cabinet on Graffenstaden		Société Genevoise 5E CN jig borer.	
Making ..	60	vertical boring mill ..	1215	Sperry ..	890
Cone Automatic Machine Co., Ltd. ..	593	Control console for Thompson Dial-A-		Control, numerical, equipment. Warner	
Cone Automatic Machine Co., U. S. A.:		Matic surface grinder. Floor-mounted	1154	& Swasey turret lathe fitted with	
Conomatic C6 2 1/2-in. capacity multi-		Control. continuous-path, "American"		Bunker-Ramo ..	152
spindle automatic ..	593	type 4025 lathe with G. E. Mark	692	Control. numerical, FIMAP Olympia jig	
Conference. 6th International Machine		Century 102C ..	692	borer with ELBO type P. O. E. 25 1116,	1458
Tool Design and Research ..	669, 674, 1058, 1095	Control. continuous-path, Ekstrom-		Control. numerical, Fortuna-Werke type	
Connecting rods. Automatic assembly		Carlson No. 444 Rout-O-Mill for high-		AFD 350/1000 AN cylindrical grinder	
ensures high quality of ..	153	speed milling and routing with Bunker-		with ..	775
Connecting rods. "High Duty Alloys" ..	86	Ramo 3100 system of ..	696	Control. numerical, G. E. Mark Century	
Continental 2 Production Saw. DoALL ..	604	Control, continuous-path, equipment on		103-P, Burgmaster travelling-column	
Continental Screw Co.:		Graffenstaden vertical boring mill.		turret-type drilling, boring, tapping	
Holtite Taprite thread rolling screws		G. E. Mark 100S ..	1214	and milling machine with ..	1054
Continuous casting plant. Automatic flame		Control, continuous-path, equipment on		Control. numerical, Giddings & Lewis	
cutting machines for ..	1275	Heinemann automatic turret lathe.		"jig borer" machine with laser inter-	
Continuous-path control. Bunker Ramo		G. E. Mark 100S ..	1216	ferometry equipment for checking	
3100 2-axis, Ekstrom-Carlson No. 444		Control. continuous-path, Gray 660 FC		accuracy of table positioning under ..	997
Rout-O-Mill for high-speed milling		6-in. spindle floor type horizontal		Control. numerical, Giddings & Lewis	
and routing with ..	696	borer with General Electric 103C ..	596	NumeriCenter type 70 machine with	704
Continuous-path control equipment, G. E.		Control, continuous-path numerical,		Control, numerical, Heller, equipment	
Mark 100S, on Graffenstaden vertical		equipment for machine tools. Olivetti	766	on Boehringer type V800 lathe ..	1371
boring mill ..	1214	Control, continuous-path, system,		Control. numerical, Jobbing shop	
Continuous-path control equipment on		Bunker-Ramo 3100, on Hilmyer type		working under ..	1188
Heinemann automatic turret lathe.		E40-TCC vertical-spindle machine ..	1268	Control. numerical, Jones & Lamson	
G. E. Mark 100S ..	1216	Control for continuous-path turning,		Specialmatic turret lathe with ..	1385
Continuous-path control equipment on		boring and facing. Lodge & Shipley		Control. numerical, Kolb co-ordinate	
Hessapp type 75 FKS die milling		type 2013 AVS lathe with G. E. Mark		drilling machine with ..	466
machine. Brown Boveri 3-axis ..	777	100S ..	601	Control. numerical, Kolb type NUCO	
Continuous path control. G. E. Mark		Control, electric, system, Clarktron		70 jig borer with ..	888
Century 102C, "American" type 4025		Transfermatic, on Waterbury Farrel		Control. numerical, Kipings type SIONC	
lathe with ..	692	transfer press ..	1002	production lathe with ..	461
Continuous-path control. Gray 660 FC		Control, electrical, equipment.		Control. numerical, Landis type 4R	
6-in. spindle floor type horizontal		Simplex-GE ..	1059	Size Finder plain cylindrical grinder	
borer with General Electric 103C ..	596	Control equipment. Cincinnati Telematic	111	with ..	948
		Springfield Opro-Turn lathe with ..	953		



	PAGE		PAGE		PAGE
Control, numerical, Lodge & Shipley equipment for pre-setting tools to be used on machines with ..	602	Control, punched-tape, Cincinnati Acramatic 330 3-axis, on Headrill drilling, boring and milling machine ..	995	Control, tape, Sundstrand Omnimil "machining centres" fitted with ..	19
Control, numerical, Lucas Versa-Tronic vertical boring and milling machine fitted with ..	15	Control, punched-tape, Cintimatic 8-spindle turret drilling and milling machine with Acramatic 330 ..	1050	Control, tape, system. General Electric 103PB, Avey turret-type drilling, boring and milling machine with ..	998
Control, numerical, Machine tool programming with ..	1356	Control, punched-tape sequence, Pedersen type VPU-32 milling machine with ..	468	Control, tape, system. G. E., on Edlund type NPB machine for drilling printed circuit boards ..	1272
Control, numerical, Machine tools with Control, numerical, Machining under, at a Ferranti factory ..	490	Control, remote, of Kopp speed variators. Air-operated equipment for the ..	975	Control, tape, system on Graffenstaden type FB 616 SD CN ram-type milling machine. Plessey Mark III ..	1318
Control, numerical, New Asquith 2 HD drilling and tapping machine with ..	1227	Control, sequence, equipment. Developments in connection with Elliott ..	548, 646, 917	Control, tape, system. Plessey Mark III I. A. E. ..	379
Control, numerical, Numérol facing and turning lathe with ..	1213	Control, sequence, Programming for a Hardinge lathe equipped with ..	917	Control, tape, Télémecanique Electrique, Sculfort Salomé Synchronat lathe with ..	1432
Control, numerical, Olivetti Zig-Zag CNZ, "Rigid" bed-type vertical milling machine with ..	1431	Control, size, system for lathes. V. D. F. Diamatic ..	1137	Control, tape, Use of a rotary table with, in the production of precision optical angular scales ..	865
Control, numerical, Planning for ..	521	Control system for machine tools. Bullard Temple-Turn ..	353	Control, tape, Vero 18-spindle Autodrill with, for operations on valve spools ..	269
Control, numerical point-to-point, equipment. Cabinet containing Ferranti Scope ..	1313	* Control system for a power press ..	34	Control, tape, Wadkin type TH Mark 2 drilling machine with ..	266
Control, numerical position, Ex-Cell-O type 992 4-axis Numeratrol precision boring machine with ..	592	Control systems. Developments in ..	907	Control unit for presses: Contronics ..	886
Control, numerical, The possibilities of drafting machines with ..	451	Control, tape, Asea NSL 102, system on Koppings vertical milling machine ..	1092	Control unit, Sanders electric motor ..	935
Control, numerical or potentiometer setting, New Britain No. 112 chucking automatic with ..	1153	Control, tape, Cincinnati CIM-X machine arranged for ..	616	Control valves. Range of J. J. Churchill pneumatic ..	1120
Control, numerical sequence, B. S. A. type 95N chucking automatic with ..	453	Control, tape, Cincinnati type ATC machining centre with ..	1000	Controlled-environment inspection room ..	1260
Control, numerical, Sheffield 3-axis measuring machine with ..	689	Control, tape, Circuit diagrams produced under ..	1144	Controller. Marcotron variable-speed drive ..	894
Control, numerical, Skoda type SHU 100 centre lathe with ..	1277	Control, tape, Contraves, Henschel type F 081 plano-milling machine with ..	1088	Controller. Bare-Line automatic bandaw blade ..	1271
Control, numerical, system, Brown Boveri on Reinhard Bohle 8-spindle turret head horizontal milling machine ..	889	Control, tape, Cophilmatic drilling, boring, tapping and milling machine with ..	1314	Contronics, Ltd., Control units for presses ..	886
Control, numerical, system, DeVlieg type J Jigmill equipped with Tapac ..	588	Control, tape, equipment. Crech magnetic ..	1279	Conveyor - installation at Ford Motor Co. Ltd. Large "Hall Engineering" ..	332
Control, numerical system, Grundig, on Scheu-Schwartz-kopff turret lathe ..	1087	Control, tape, equipment on Hayes Tapemaster and Tracemaster machines. Ferranti ..	1219	Conveyors. Rapistan hinged steel plate Coolant clarifier. New Philips magnetic Coolant clarifying installation at Rolls-Royce. Alfa-Laval TurboMatic ..	772 652 499
Control, numerical, system. A projected experimental ..	131	Control, Tape, equipment for machine tools - A survey of continuous - path systems ..	24	Coolant equipment. M. G. ..	1136
Control, numerical, system on Torsilla Holmaster co-ordinate drilling and boring machine. Saab ..	887	Control, tape, Ex-Cell-O Burgmaster type 3 BHTL-SH turret drilling machine with ..	470	Coolant pump. S. E. M. ..	779
Control, numerical, system. Fritz Werner type FV 3 vertical milling machine with ..	891	Control, tape, Experience with a drilling machine with ..	1307	Coolie type 4100 lift truck. Polymathic ..	321
Control, numerical, systems. French developments in ..	134	Control, tape, Ferranti Scope co-ordinate positioning equipment with ..	481	Coolie 1½-ton pallet truck. Polymathic ..	145
Control, Numerical and tape, on Giddings & Lewis machines ..	585	Control, tape, Fostick Posmatic type 56 jig borer with ..	1387	Coolie trucks in use at Rolls-Royce. Polymathic ..	1063
Control, numerical, Warner-Swasey Asquith 3AC automatic with ..	452	Control, tape, Fostick V56 Tape-Drill drilling machine with ..	1152	Cooper Engineering, Ltd., Bombay: High-duty iron casting for a slotting machine ..	376
Control panel on the Numérol lathe ..	1214	Control, tape, Grimston co-ordinate setting table incorporating A. E. I. ..	43, 105	Type AS 24 shaping machine ..	376
Control panels for machine tools. Assembly "easels" for ..	369	Control, tape, Lahr Rigibed horizontal Milwaukee-Matic series Eb machining centre with ..	695	Cophilmatic tape-controlled drilling, boring, tapping and milling machine ..	1314
Control, Production, system for a machine tool factory ..	1416	Control, tape, Lahr Rigibed horizontal drilling, milling, tapping and boring machine with ..	599	Copper. extruding, Nimnic 90 die inserts for ..	613
Control, Production, work-handling and communications systems for batch work ..	684	Control, tape, Large Cramic drafting machine with ..	581	Copper plating solution. Cuproglo 6 bright acid ..	1324
Control, programme, Brown Boveri type AW, equipment on Werner BF 3 V bed-type milling machine ..	1090	Control, tape, Leland-Gifford type 11-15 drilling machine with ..	607	Copy-milling attachment. Mimik 3-axis ..	94
Control, programme, Canning barrel zing-plating plant with ..	247	Control, tape, Middlesex NC 100 Speedrill drilling machine with ..	936	Copy-milling and die-sinking machine. Sverdlova type 6441b ..	305
Control, programme, Crouzet type FA 100 milling machine with ..	538	Control, tape, Monarch type 220 N/CC chucking lathe with G. E. 100-S ..	1386	Copy-milling machine. Dowling type 242 die sinking and ..	261
Control, programme, Machine tools with, employed at Hindustan Machine Tools Ltd. ..	1320	Control, tape, Motch & Merryweather type 21-VNC vertical-spindle chucking automatic with ..	600	Copy-milling machine. Polish-built FGC 24A electronic ..	363
Control, programme, Morando type KL 14 vertical boring mill with ..	651	Control, tape, Plessey Mark III, equipment on Werner BF 3 V bed-type milling machine ..	1090	Copy-milling machine. Swiss-built Rigid type KAB 50 ..	702
Control, programme, system, Peer-Matic, on Peerless bandsawing machine ..	1268	Control, tape, Cophilmatic drilling, boring, tapping and milling machine with Phillips ..	1314	Copy-shaping machine. Russian-built Kirov hydraulically-operated ..	83
Control, programme, Polish-built vertical milling machine arranged for ..	365	Control, tape, S. E. A., Cornac Stabimajor horizontal boring, milling and semi-jig boring machine with ..	1435	Copy-turning lathe. +GF+ type KDM 9/80 ..	455
Control, programme, Winna batch transfer system for metal finishing under ..	703	Control, tape, Scharmann boring and milling machine with ..	1229	Copy-turning lathe. Weissner Multicop ..	456
Control, punched-tape, "American" Economy lathe with G. E. type 100S ..	692			Copy-turning with a Tynac Tracer attachment. High-precision ..	980
				Copy for drilling machine for printed circuits. Posalux ..	297
				Copying attachment arranged for operation on multi-pass cycle on Heidenreich & Harbeck lathe ..	1374
				Copying attachment. Boehringer Hydrokop-Universal out-of-round hydraulic ..	1372
				Copying lathe. Hungarian-built semi-automatic ..	249
				Copying lathe. Pilote type S hydraulic ..	134
				Copying lathes arranged for "discontinuous automation." Dobled ..	1425

	PAGE		PAGE		PAGE
Copying machines. small aluminium components for Rank Xerox		Croucher, Antony H., Ltd.: Laborimil universal machine tool ..	351	Dawson Bros., Ltd.: Automatic cleaning and drying machines installed at Austin works	1035
Continuous milling ..	330	Crouzet England, Ltd. ....	538	Dawson, Payne & Elliott, Ltd.: Experience with a tape-controlled drilling machine ..	1307
Copying units for lathes. Hepworth types 1200, 1600 and 2400 hydraulic ..	768	Crouzet type FA 100 programme-controlled milling machine. French-built	538	Dayton Perforators, Ltd.: AnySizer attachment for grinding punches ..	1319
Cordax measuring machine. Sheffield ..	689	Crown involute gear tester ..	140	De-rodging machine. Bronx type BRO bar straightening and tube ..	1044
Cornac, Ets. E.: Stabimajor type 3S horizontal boring, milling and semi-jig boring machine with S.E.A. tape control equipment	1435	Cruikshanks Divn. of Forestal Industries (U.K.), Ltd.: New fully-immersed plating barrel ..	300	De-scaling arrangement. An arc ..	520
Cornet precision cylindrical grinder ..	656	New plating solutions ..	1324	De-sealing unit. Cleco B1-ANB needle-type ..	811
Coromant Ejector Drill ..	559	Cub trucks in use at Rolls-Royce. Polymathic ..	1063	De-soldering tool. Antex ..	1145
Correction of alignment errors in machine tools. Automatic ..	674	Cummins Engine Co., Inc. ....	156	Dean, Smith & Grace 25-in. centre lathe with Hepworth types 1200, 1800 and 2400 hydraulic copying units ..	768
Correlator. Honeywell type 9410 Sweep Delay ..	1328	Cuproglo 6 bright acid copper plating solutions ..	1324	Deburring costs reduced by electro-chemical machining ..	152
Corrie MacColl & Son, Ltd. ....	10	Curtiss-Wright Corp.: Marquette Divn.: Swench hand-operated impact wrench	719	Deburring machine. Roto-Finish Spiratron ..	103, 884
Corrosion Abolition, Ltd.: Anti-corrosion compounds ..	367	Cutler-Hammer laser interferometry equipment for checking accuracy of table positioning on Giddings & Lewis "jig borer" machine ..	997	Deburring and polishing machine. Flexiband bench-type abrasive-belt	351
Cory Bros., & Co., Ltd. ....	187, 811	Application of a, in connection with machine tool development ..	1401	Decollers and straightening machines. Combined ..	1142
Cost reduction, possibilities of - Quality and reliability ..	1075	Cutler-Hammer laser interferometry equipment for checking accuracy of table positioning on Giddings & Lewis "jig borer" machine ..	997	Deep-hole boring machine. Archdale No. 100 ..	463
Counter. Radiatron type B impulse	660	Cutting fluid. Rapid Tap ..	75	Degenhardt & Co., Ltd. ....	892
Counter with re-setting key. ENM series 442 ..	1086	Cutting machine. Osmond type 5M11 abrasive wheel ..	260	Delapena, Paul, Ltd. ....	1316
Counters. Hardings pneumatically-operated ..	664	Cutting-off machine. Dux dual-purpose	1043	Delapena & Son, Ltd. ....	486
Counters. Vistolux photo-electric counterbalancing arrangements for direct arc furnaces. Electrode ..	1328	Cutting-off slabs and blooms to weight..	879	Delapena vertical honing machine set up for honing 10-in. long bores of hydraulic valves ..	47
Coupling component. Churchill chucking automatic set up for machining a cast iron ..	88	Cycle programmer. Nordberg ..	1271	Demonstration coach. Richmond Machine Tool Co. ....	503
Coupling. Uni-Tubes flexible ..	22	Cylinder block boring machine. Ex-Cell-O angular ..	663	Demonstration of machine tools by Matchless Machines Ltd. ....	1114
Couplings with B.S.P. threads. Hansen	39	Cylinder block castings. Large Diskus grinding machine installation for ..	992	Demonstration of Moore machines ..	1166
Couplings. Lonertia Turbomotor fluid ..	973	Cylinder blocks. Buhr in-line transfer machines for operations on Ford ..	1284	Denison Deri, Ltd.: Honing 10-in. long bores of Meelanite hydraulic valves on Delapena vertical machine ..	47
Couplings. Monflex multi-swaged	100	Cylinder. Fortis hydro-pneumatic ..	659	Design in Engineering Exhibition	1048
Cousins, Mr. Frank: Speech at the 8th International Machine Tool Design and Research Conference	669	Cylinder heads. Buhr Economat in-line transfer machine for ..	698	Design of machine tools. M.I.T.R.A. research to facilitate computer ..	104
Coventry Gauge & Tool Co., Ltd.: Matrix Mark 3 high-speed automatic circular division tester ..	11	Cylinder heads. Semi-automated equipment for assembling ..	411	Destaco toggle clamps ..	1061
Matrix thread grinder in temperature-controlled room ..	1276	Cylinder heads. Set-up on Herbert 4TV vertical machine for face milling ..	368	Detector. L.D.E.P. photo-electric billet ..	360
Coventry Movement Co., Ltd.: Stayput dial indicator gauge ..	750	Cylinder liners. An interesting link-line for diesel ..	572	Detector switch. A.S.B. magnetic proximity ..	1207
Coward, Wm., & Co. Ltd. ....	878	Cylinders. Ellison low-pressure hydraulic ..	1258	Detector unit. Tedeco magnetic ..	641
Craftsman Tools, Ltd.: Toolholders for use with throw-away tip cartridges ..	609	Czech-built vertical turning and boring machine of unusual design ..	554	DeVlieg Machine Co.: Type K Jigmill equipped for operation by Tapac IV numerical control system ..	587
Cramic Engineering Co., Ltd.: Large tape-controlled drafting machine	581	Czechoslovak die casting plant. Details of a modern ..	1439	Dex Machine Tools, Ltd.: Zagar-Dex 268-spindle machine for drilling circuit boards ..	1046
Crane components, Savings effected in the manufacture of, with Hancock	920	Czechoslovak machine tools. Some recent developments in ..	1277	Diabase slab for bed of Angstromatic precision boring, facing and turning machine ..	999
Crane. Westinghouse ME Tonner floor crankshaft balancing machines. Tinius Olsen semi-automatic ..	199			Diagrams, Circuit, produced under tape control ..	1144
Crankshaft die casting for Italian motor car ..	711	DME unit die casting die system ..	940	Dial-A-Matic surface grinder. Thompson type PC 24 by 36 by 96-in.	1154
Crankshaft grinding wheels, Dressing, with Triefus diamond tools ..	346	Dahlin, R.A.: Cylindrical "abrasive machining" ..	310	Dial indicator measuring instruments. Helios ..	504
Crankshaft journal grinder. Churchill ..	761	Dale, John, (Foundries) Ltd.: Demonstration of Heatlock low pressure die casting furnace ..	715	Diamond finishing of carbide punches and dies ..	313
Crankshaft lathe. Froriep, Hydrostatic bearings for a ..	1392	Dalic plating demonstrations Series of ..	955	Diamond form grinding wheels. Single-layer ..	764
Crankshaft line. The new Perkins ..	812	Damic automatic drilling machine for producing 0.010- to 1/2-in. holes ..	1222	"Diamond" sintered carbide tools ..	762
Crankshaft turning machine. Dorries type KB 16 ..	533	Danish Machine Co.: Cornet precision cylindrical grinder ..	656	Diamond tools. Caledonian type 55 Profile Accurascope for sharpening	1084
Crankshafts. Ailing machine for milling location spots on ..	812	Darlington Forge, Ltd.: Installation of Berthiez vertical boring and turning mill ..	1149	Diamond tools. Dressing crankshaft grinding wheels with Triefus ..	346
Crankshafts. Sigma gauging installation for ..	815	Daubert Chemical Co.: Nox-Rust Divn.: Motorator vapour phase rust inhibitor ..	254	Diamond turning. Reconditioning electrical components by ..	45
Cressex 15-ton inclinable adjustable-stroke ungear power press ..	350	Davis, Stuart, Ltd.: Red Ring pneumatic cylinders for counterbalancing arrangements for direct-arc furnaces ..	1328	Diamond wheel. I.D.P. metal-bonded ..	324
Criterion tapping and threading attachments ..	241	See also ..	599, 612, 696, 1269	Diamond wheel. Large ..	154
Critical path analysis. Computer applied to ..	298			Diazo enlargers. Ozalid to market	332
Crompton Parkinson, Ltd.: New ranges of a.c. motors and generators ..	178				
Crompton Parkinson (Stud Welding), Ltd.: Crompare 875 stud welding unit ..	1042				
Crook, W.H.: Design of measuring instruments ..	140				

	PAGE		PAGE		PAGE
Diazo printing machine. Halden		Diffusion bonding of aluminium ..	355	Dressing crankshaft grinding wheels	
HALCODri .....	553	Digital Electronic Automation:		with Triefus diamond tools ..	346
Didacton Automat and Didacton tic-tac		Beta 3d measuring and marking-out		Drill, Air-bearing, for circuit boards	191
training equipment. Mondiale	657	unit .....	778	Drill Service (Horley) Ltd.:	
Die casting dies. Electrical discharge		Digital position servomechanism	805, 1097	Carbide-tipped reamers ..	262
machining of .....	427	Dimensional differential system		Type 115 drilling machine for	
Die casting dies improved by Tufftriding		of air gauging .....	1263	printed circuit boards ..	416
treatment .....	945	DIMil 3-axis contour milling and die		Drill. Skil type 587B variable-speed	
Die Casting Exposition and Congress.		sinking machine. Giddings & Lewis	584	electric ..	1220
Third National .....	427	Dip-brazing ensures high-quality		Drilling and boring machine. Torahilla	
Die casting furnace. Demonstration		waveguides .....	1325	Holemaster co-ordinate ..	887
of Heatlock low pressure ..	715	Dip-painting and stoving unit.		Drilling, boring and milling machine	
Die casting machine. Buhler type		Auteq type AD 20 ..	498	with Cincinnati Acramatic 3-axis	
H-400-D cold-chamber ..	536	Diplomat drawing stand. Admel	1312	punched-tape control. Headrill	
Die casting machine sent to U.S.A.		Dipping tank. Combined spray booth		type 2053 ..	995
by air. E.M.B. type 12A ..	837	and .....	1368	Drilling, boring and milling machine	
Die casting machines. High-speed		"Discontinuous automation". Dubied		with GE tape control. Avey No. 350-HB	
injection on pressure ..	946	copying lathes arranged for ..	1425	horizontal turret-type ..	998
Die casting machines. New Triulzi	430, 487	Diskus-Werke:		Drilling, boring, tapping and milling	
Die casting machines. V.W.F.		Large grinding machine installation		machine. Burgmaster type	
pressure .....	210	for cylinder block castings ..	992	3 BHT-SH-TC travelling-column,	
Die casting plant. Details of a modern		Dispenser for Larcher end milling		with G.E. Mark Century control ..	1054
Czechoslovak .....	1439	cutters ..	133	Drilling, boring, tapping and milling	
Die casting, Pressure, in the		Distillers Co., Ltd.:		machine. Cophilmatic tape-	
S.I.M.I. foundry, Milan ..	201, 707	Film: Welding advances with CO <sub>2</sub> ..	735	controlled ..	1314
Die casting Singer sewing machine		Distributor body die casting.		Drilling circuit boards. Zagar-Dex 288-	
components. Pressure ..	1158	Motor car ..	707	spindle machine for ..	1046
Die casting. "Unit dies" for ..	940	Dividing head. Russian type EDG-2		Drilling head. Multitour high-speed ..	660
Die castings. painting small,		electro-inductive ..	873	Drilling machine with air-operated and	
Equipment for ..	1060	Dividing units. Hoffmann types WR		electrically-controlled working	
Die castings. Pollard rotary transfer		and EMT ..	658	cycle. Snow type DR vertical ..	691
machine for drilling, reaming and		DoALL Company:		Drilling machine. Aldelverken type	
countersinking small-diameter		Bandsawing machine arranged for		U35/1A automatic-cycle ..	897
holes in ..	1364	automatic control from a line		Drilling machine. Avey tape-	
Die castings in the production of the		drawing by photo-electric tracing		controlled 6-spindle turret ..	523
Skoda 1000MB car. Light alloy		system ..	603	Drilling machine. Carlton type 4A	
Die inserts for extruding copper.		Continental 2 Production Saw	603	radial. Set-up on ..	1057
Nimonic 90 ..	613	Heavy-duty tilting-frame vertical-		Drilling machine. Ex-Cell-O	
Die handler. Oldham Little Giant		type bandsawing machine ..	603	Burgmaster type 3 BHTL-SH tape-	
jig and ..	1328	Dobson Engineering Services ..	350	controlled turret ..	470
Die milling machine. Hessapp type		Donelan, Earl J.:		Drilling machine. Experience with	
75 FKS ..	777	Planning for numerical control ..	521	a tape-controlled ..	1307
Die and mould cavities. Rockford		Donovan Electrical Co., Ltd.:		Drilling machine feed unit. Bellows	
Hy-Draulic Synchro-Trace milling		Type A44 automatic star delta		Valvair ..	289
machine for production of deep ..	693	starter ..	570	Drilling machine. Fosdick type V56	
Die-sinking and copy milling machine.		Door gussets. Projection spot welding		Tape-Drill 3-in. tape-controlled ..	1152
Dowling type 242 ..	261	machine for ..	748	Drilling machine. Kerry's ultrasonic	
Die-sinking machine. Giddings &		Doors, cabinet, for Frigidaire		Drilling machine. Kitchen-Walker	
Lewis DIMil 3-axis contour		refrigerators. Making ..	740	type E5 heavy-duty radial ..	1039
milling and ..	584	Dorman Machinery Sales, Ltd. ..	418, 597,	Drilling machine. Kolb numerically-	
Die-sinking machine. Sverdlova type		672, 950, 1093, 1432		controlled co-ordinate ..	466
644lb copy-milling and ..	305	Dormer series 2 Heli-Matic holder for		Drilling machine. Leland-Gifford type	
Die-sinking. Numerical control for ..	395	screwed-shank tools ..	263	11-15 tape-controlled ..	607
Dies. carton, Ferro-Tic C		Dormer type 78 twist drill grinder ..	477	Drilling machine. Middlesex NC 100	
machinable carbide for ..	580	Dorries, O., AG.:		Speedrill tape-controlled ..	936
Dies. die casting, Electrical discharge		Type KB 16 crankshaft turning		Drilling machine for printed circuit	
machining of ..	427	machine ..	533	boards ..	326
Dies, Die casting, improved by		Dorepa, Ltd. ..	1043	Drilling machine for printed circuit	
Tufftriding treatment ..	945	Dorst 300-ton automatic dry powder		boards. "Drill Service" type 115	
"Dies, Unit", for die casting ..	940	pressing machine ..	1138	Drilling machine for printed circuits.	
Diedesheim, Maschinenfabrik, G.m.b.H.:		Domestic ladling system for use in		Posalux Copy for ..	256
Visit from British engineers ..	1062	die casting ..	488	Drilling machine for producing 0.010-	
Diehead. Landis, Hollow-milling		Douglas, A., Co., Ltd.:		to 1/2-in. holes. Damic automatic ..	1222
plastics with a ..	200	Machine tool exhibition ..	897	Drilling machine. Sint multi-spindle ..	656
Diesel cylinder liners. An interesting		See also ..	350	Drilling machine. Vero series 1000	
link-line for ..	572	Dowling & Doll, Ltd.:		Autodrill turret, with Ferranti	
Diesel engine crankshaft grinding		Accuratool automatic turret lathe	93, 699	Scope numerical control ..	1088
wheels, Dressing, with Triefus		Machine tool demonstration ..	699	Drilling machine. Vero 18-spindle	
diamond tools ..	346	See also 196, 473, 953, 1155, 1271, 1431		tape-controlled, for operations	
Diesel engine crankshaft line.		Dowels, Automatic assembly of,		on valve spools ..	268
The new Perkins ..	812	to sprockets ..	820	Drilling machine. Wadkin type MRD	
Diesel engine cylinder block boring		Dowling, David, Ltd.:		radial-arm ..	535
machine. Ex-Cell-O ..	663	Type 242 die sinking and copy		Drilling machine. Wadkin type TH	
Diesel engine cylinder heads. Buhr		milling machine ..	261	Mark 2 tape-controlled ..	266
Economic in-line transfer		Drafting machine. Large Cramic		Drilling machines. Meddings multi-	
machine for ..	698	tape-controlled ..	581	head ..	1040
Diesel engine. Ruston AO 2-stroke		Drafting machines. The possibilities		Drilling, milling and boring machine.	
Diesel engines, Chrysler-Cummins	86	of numerically-controlled ..	451	Edlund-Matic type 2NL ..	1150
factory at Darlington for 30,000		Drainage roller shafts. Hard-facing ..	420	Drilling and milling machine,	
per year ..	156	Drawing stand. Admel Diplomat	1312	Cintimatic 8-spindle turret, with	
Diesel generating sets. New Petbow		Drawings. production of engineering,		Acramatic punched-tape control ..	1060
Diesel plant. James Archdale major		Cape Jeffrey microfilm for ..	332	Drilling, milling, tapping and boring	
suppliers to Spanish ..	396	Drawings. reproduction of		machine. Lahr Rigibed tape-	
Differential system of air gauging.		engineering, Loftline vacuum		controlled horizontal ..	599
The Dimensionair ..	1263	printing table for ..	1173	Drilling printed circuit boards. Edlund	
Diffraction gratings. Ruling master	302			type NPB machine for ..	1272

	PAGE	E	PAGE		PAGE
Drilling, reaming and countersinking holes in die castings. Pollard rotary transfer machine for ..	1364	ECM techniques. Developments in ..	1450	Electro-hydraulic thrusters. British Brown-Boveri ..	87
Drilling service. Automated industrial Drilling set-up on C.V.A. auto. ..	1066	E.D.M. (electrical discharge machining) in the production of die casting dies ..	427	Electro-inductive dividing head. Russian type EDG-2 ..	873
Deep rear-end and cross- ..	751	EGB Tool & Equipment Co., Ltd. ..	1223	Electro-magnetic clutches and brakes for rotary indexing table ..	939
Drilling, tapping and boring machine, Brown & Sharpe Hydrotape type 224, with numerically controlled table positioning ..	586	E.I.A. Displays. Exhibits at recent ..	349	Electro-plated plastics components ..	1398
Drilling, tapping, boring and milling machine. Giddings & Lewis Numericer type 70 numerically-controlled ..	704	E.I.A. Engineering Exhibition ..	899, 1221	Electro-plating machine. A versatile Electrode counterbalancing arrangements for direct arc furnaces ..	1037 1328
Drilling and tapping machine. New Asquith 2 HD numerically-controlled ..	1227	ELBO type F.O.E. 25 numerical control equipment on FIMAP Olympia jig borer ..	1316, 1458	Electrodes: Sparkonite 10 tubing for spark machining ..	127
Drilling and tapping machine. Meddings ..	410	E.M.B. Co., Ltd.: Die casting machine sent to U.S.A. by air freight service ..	837	Electrofeed lathes, Lang range of, extended ..	413
Drilling, tapping and reaming machines. Wadkin type TH co-ordinate setting single-spindle ..	450	E.M.I. Electronics, Ltd.: Youngman Robotug driverless tractor See also ..	309 766	Electroloid, Ltd.: Heavy-duty switchgear ..	130
Drillimation Co. Inc.: Bore-Pann machine for production of accurately spaced and sized holes by boring or trepanning at one operation ..	996	ENM series 442 counter with re-setting key ..	1086	Electrolytic grinding and electrolytic lathes ..	1027
Drive controller. Marcotron variable-speed ..	894	E.S.L. type TM. 1024 teaching machine ..	971	Electrolytic honing machine. Micromatic prototype ..	591
Drive. G.E. Polydyne, Ferracute press with ..	1273	E.S.T. (Gauges), Ltd.: Dimensional differential system of air gauging ..	1263	Electrolytic marking machine. Pryor ..	1143
Drive unit. Headland variable-speed ..	1384	Master setting ring calibrating service ..	435	Electron beam welding equipment. Hawker Siddeley Dynamics ..	84, 1253
Drive unit. Heynau H-Drive variable-speed ..	1422	E.T.S. (Lonertia), Ltd.: Turbomotor fluid couplings ..	973	Electron-beam welding machine. Sciaky ..	972
* Driving arrangements for the table of a planing machine ..	34	"Easels", Assembly, for electrical panels ..	369	Electron beam welding as a production process ..	796, 852
Drop Forging Research Association. New laboratories of the ..	1375	Eclipse metal cutting saw bands ..	547, 619	Electron beam welding service. Torvac ..	1232
Drummond-Asquith, Ltd.: Supply of automatic link-line for production of diesel engine cylinder liners ..	572	Economatic in-line transfer machine for cylinder heads. Buhr ..	698	Electronic copy-milling machine. Polish-built FGC 25A ..	363
See also ..	134, 153, 452, 598, 1035, 1151, 1386	Economist in industry. The "Economy" lathe, "American", with G.E. type 1008 punched tape control ..	115 692	Electronics Division of Clarke Chapman & Co. Activities of ..	436
Drummond Maximatic and Maximinor lathes at Chrysler-Cummins ..	577	Edlund-Matic type 2NL drilling, milling and boring machine ..	1150	Electronic event timer. Fairley ..	72
Du Pont de Nemours, E.I., & Co. Dabied type 517 hydraulic copying lathes arranged for "discontinuous automation" ..	1425	Edlund type NPB machine for drilling printed circuit boards ..	1272	Electronics engineering service for engineers ..	947
Ductile cast iron - probable pattern of development ..	1274	Educational Systems, Ltd. ..	971	Electronmaster comparator. Federal 136B-3 ..	435
Duo-Seal No. 1402 rotary vacuum pump. Welch ..	1225	Edwards, F.J., Ltd.: Besco-Trucoat Mark-2 type 8/125 precision gullotine ..	100	Electrophoretic painting and stoving equipment. Barlow-Whitney Evencoat automatic ..	1060
Duromat induction hardening and brazing machine. Dusseldorf ..	486	Ejector drill. Coromant ..	559	Electropol Processing, Ltd.: Winna programmed batch transfer system for metal finishing ..	703
Dusseldorf, Fritz: Duromat induction hardening and brazing machine ..	486	Ekstrom-Carlson & Co.: No. 444 Rout-O-Mill for high-speed routing and milling with Bunker-Ramo continuous-path control ..	695	Electrostatic spraying equipment. Aerograph-DeVilbiss ..	259
Dust collector. "American" ..	87	Elb-Schliff rotary-table surface grinding machine ..	541	Eley Ammunition Group, DMI (Kynoch), Ltd.: Installation of Chappuis transfer press for production of heads for cartridges ..	612
Dust Control Equipment, Ltd.: Dust extraction installation for steel slab grinders ..	352	Electramill. Richards BM04 ..	1038	Use of plastics extruding machine for cartridge cases ..	1225
New research and development block ..	1288	Electric drill. Skil type 587B variable-speed ..	1220	Elga Hydrashear exhibited at Chicago Show ..	895
Dutch engineers, Visit of, to Alfred Herbert Ltd. ..	1285	Electric motors. Context f.h.p. ..	320	Elgar Machine Tool Co., Ltd. ..	464, 533, 534
Dux dual-purpose cutting-off machine ..	1043	Electric motors. New English Electric Electric motors and generators. New ranges of Crompton Parkinson ..	178	Elkonite-copper bi-metal for electrical contacts ..	650
Dynamill horizontal boring, milling and drilling machine with 2-axis Mark Century numerical control. Bullard 5-in. ..	590	Electrical components, Reconditioning, by diamond turning ..	45	Elliott-Automation, Ltd.: Sonics Divn.: Ultrasonic cleaning unit ..	750
Dynapak high-energy-rate forming machine installed at works of B.S.A. Forge Ltd. ..	1457	Electrical contacts. Elkonite-copper bi-metal for ..	650	Elliott, B. (Machinery) Ltd.: Elga Hydrashear exhibited at Chicago Show ..	895
Dynapath 20 continuous-path control system. Bendix ..	25	Electrical control equipment. Simplex-GE ..	1059	Elliott Bros. (London), Ltd.: Developments in connection with sequence control equipment ..	546, 646
Dynapath equipment for continuous-path machining and point-to-point positioning on Versa-Tronic vertical boring and milling machine. Bendix ..	15	Electrical discharge machining of die casting dies ..	427	803 computer installed in Gdansk Central Shipbuilding Design Office ..	618
Dynatrol vertical turning and boring mill. Bullard 46-in. ..	590	Electrical panels. Assembly "easels" for Electro-Chemical Engineering Co., Ltd.: Installation of Efco-Udyllite plating equipment at Raleigh Industries for treatment of wheel rims by Tri-Ni plating process ..	502	Sequence control system on Hardinge lathe ..	917
		Versatile electro-plating machine ..	1037	Elliott Machine Tool Co., Ltd. Exhibition of machine tools made by ..	1455
		Electro-chemical machining. Deburring costs reduced by ..	152	Ellison, George, Ltd.: Ellison Hydraulics Divn.: Hydraulic check valves ..	825
		Electro-chemical machining. Mitsubishi type MC-50 equipment for ..	258	Low-pressure hydraulic cylinders ..	1258
		Electro-chemical machining techniques. Developments in ..	1450	Elmeg press. Riveting set-up on ..	118
		Electro-chemical machining of a turbine blade ..	1198	Elmes hydraulic press, Nordberg, set up for production of copper tubular T-pieces ..	1054
		Electro-chemical machining unit. Large Anocut ..	1122	Elquen heat treatment process ..	882
		Electro-chemical marking equipment. Chem-Mark ..	727	Eltherington, C., & Co., Ltd.: HJ type-300 slotting machine ..	95
				Eltrodyne wheel balancing equipment ..	760



	PAGE
Emerson read-out units for table and cross-rail head positions. Gray Handymill openside plano-milling machine with .. .. .	505
Emralon surface coatings by Acheson. New .. .. .	297
Encapsulation and impregnating plant. Barlow-Whitney .. .. .	1061
Encoder, RON incremental .. .. .	1317
End-milling cutter. Prolite Little Chipper .. .. .	770
Enfield College of Technology: A digital position servo-mechanism .. .. .	805, 1097
Engine components. Pressure die casting of, at the S.I.M.I. foundry Milan .. .. .	707
Engine cylinder liners. An interesting link-line for diesel .. .. .	572
Engine, diesel, crankshaft line. The new Perkins .. .. .	812
Engine. Ruston AO 2-stroke diesel .. .. .	86
Engines, diesel, Chrysler-Cummins factory at Darlington for 30,000, per year .. .. .	156
Engines, diesel, James Archdale major suppliers to Spanish factory for production of .. .. .	396
Engineering Export Promotion Council (India) .. .. .	1324
Engineering Industries Association: Exhibits at recent one-day displays Talk and discussion on Simple Automated Machine Tools .. .. .	954
London Regional Display .. .. .	899, 1221
Exhibitors: Brauer, F., Ltd. .. .. .	1224
Carver & Co. (Engineers), Ltd. .. .. .	1223
Channel Tool Distributors, Ltd. .. .. .	1221
E. G. B. Tool & Equipment Co., Ltd. .. .. .	1223
Elliott-Automation, Ltd. .. .. .	1221
Fraser, Andrew, (Ealing) Ltd. .. .. .	1224
Meggitt Machine Tool & Equipment Co., Ltd. .. .. .	1222
Pinder, W., & Son, Ltd. .. .. .	1222
Straight & Vines, Ltd. .. .. .	1221
Trenjaeger (G.B.), Ltd. .. .. .	1221
Williams, H., & Son, Ltd. .. .. .	1222
Engineering Materials and Design Exhibition. Fourth: Exhibitors: Bound Brook, Ltd. .. .. .	726
Firth-Brown, Ltd. .. .. .	727
Firth-Vickers Stainless Steels, Ltd. .. .. .	727
Hadfield, Ltd. .. .. .	727
Jessop-Saville, Ltd. .. .. .	727
Manganese Bronze, Ltd. .. .. .	726
Nadella Bearing Co. Ltd. .. .. .	727
Polypenco, Ltd. .. .. .	726
Royal Worcester Industrial Ceramics, Ltd. .. .. .	726
Smith, S., & Sons (England), Ltd. .. .. .	725
Tufnol, Ltd. .. .. .	727
Unicast, Ltd. .. .. .	725
United Coke & Chemicals Co., Ltd. .. .. .	726
Engineering Products, Ltd.: Oldak knurling tools .. .. .	94
Engineering & Scientific Equipment, Ltd.: Esway fully-automatic Rockwell hardness tester .. .. .	830
English Electric Co., Ltd.: English Electric-Leo Marconi computer bureau .. .. .	298
Installation of large Innocenti-CWB universal milling and boring machine New electric motors .. .. .	1109
Modern practice in the design and production of steam turbines .. .. .	1204
System 4 computers .. .. .	848
English Numbering Machines, Ltd.: Numerical read-out units on Wickman profile milling machine .. .. .	1282
Series 442 counter with re-setting key .. .. .	1086
English Steel Magnet Corp., Ltd.: Film: Permanent Magnets .. .. .	1069
Engraving fixture. Euco .. .. .	420

	PAGE
Engraving machine. Alexander type 2 LP pantograph .. .. .	403
ENIMS type 6A 12P vertical milling machine .. .. .	78
Enlargers. Ozalid to market Caps Jeffree diazo .. .. .	352
Enthoven Solders, Ltd.: Thermal-free solder .. .. .	239
Epoxide laminates. Tufnol .. .. .	18
Epoxy insulation for electrical machines Erfurt type PEE/1 open-fronted trimming press .. .. .	416
Ericsson RITT training system .. .. .	819
Eriksson, Erik, Junior Verktygsmaskiner: Torshäller Holemaster co-ordinate drilling and boring machine .. .. .	887
Ernauld-Somus, H.: Development in numerical control systems .. .. .	134
Type S Pilote hydraulic copying lathe .. .. .	134
Eroder, tap, attachment to facilitate salvaging large components. Arc-Out Esway fully-automatic Rockwell hardness tester .. .. .	830
Etamic gauging equipment. Spark machining grooves in pneumatic OMT- Euco Tools, Ltd.: Engraving fixture .. .. .	420
Europa Engineering Co., Ltd.: New range of micro-manometers .. .. .	489
European Machine Tool Exhibition. Ninth (See Brussels) .. .. .	
Eurotherm, Ltd.: Euroswitch miniature hermetically-sealed relay .. .. .	560
Eutectic Welding Alloys, Ltd.: Microfil process .. .. .	426
Evencoat automatic electrophoretic coating and stoving plant. Barlow-Whitney .. .. .	1060
Evode, Ltd.: Evo-Stik adhesive used for bonding stator laminations .. .. .	817
Ewag type WS 11 tool and cutter grinder modified for production of very small tools for spark erosion of minute profiled holes .. .. .	1115
Ex-Cell-O Corporation: Angular cylinder boring machine .. .. .	663
Close-up of spindle head of type 992 Numera-Trol boring machine .. .. .	1155
Type 30-826 contour projector .. .. .	591
Type 992 4-axis Numera-Trol precision boring machine .. .. .	591, 1155
Type 922 Numera-Trol machine for 2-axis contour boring, turning and grinding and 3-axis milling operations .. .. .	591
Micromatic Hone Divn.: Prototype electrolytic honing machine .. .. .	591
Rheem Divn.: Vu-point direct-reading position-indicating equipment on Microtecnica profile projector .. .. .	1217
High-speed tape reader and re-spooler Vu-Point position display equipment for contour projector .. .. .	593
Ex-Cell-O G. m. b. h.: Burgmaster type 3 BHTL-SH tape-controlled turret drilling machine .. .. .	470
Ex-Cell-O Group Sales, Ltd. .. .. .	470, 592, 663, 951, 1054, 1155
Examination of marking dies. Zeiss Ultraphot microscope for .. .. .	1399
Excavator components. Scharmann tape-controlled boring and milling machine for operations on .. .. .	1229
Exhall Grinding & Engng. Co., Ltd.: Air-O-Flow suction cleaner .. .. .	821
Exhaust manifolds. High-output techniques for production of .. .. .	409
Exhibitions: Chicago Machine Tool Show .. .. .	583, 615, 689, 948, 995, 1050, 1150, 1266, 1385
Design in Engineering .. .. .	1048

	PAGE
Engineering Industries Association London Regional Display .. .. .	1221
Engineering Materials and Design. Fourth .. .. .	725
European Machine Tool, Brussels. Ninth .. .. .	325, 327, 452, 530, 651, 773, 887, 1087, 1213, 1313, 1431
Leipzig Spring Fair .. .. .	76, 361, 672, 1277
London International Engineering .. .. .	84
Paris Fair .. .. .	303
Paris Machine Tool .. .. .	316
Exhibitions. Comparative size of machine tool .. .. .	1290
Exports. British machine tool .. .. .	391, 511, 903, 1231, 1289
Classified: .. .. .	108, 220, 444, 676, 844, 1180, 1348
Exports. U.S. machine tool .. .. .	385, 509, 840, 950, 1176, 1345
Express-Bend type EB 32-E universal tube bending machine .. .. .	655
Extruding copper. Nimonic 90 die inserts for .. .. .	613
Extruding machine for cartridge cases. Plastics .. .. .	1225
Extrusion facilities for High Duty Alloys. Increased .. .. .	1102
Extrusion line, cold, for producing five sizes of gudgeon pins. Automated .. .. .	38
Extrusion presses. cold, Transfer feed unit for .. .. .	198
Extrusion presses. Button .. .. .	382
Extrusion punches. Steels for cold .. .. .	22
Extrusion rams. Maraging steel for .. .. .	345
<b>F</b>	
FIMAP Olympia numerically-controlled jig borer .. .. .	1316, 1458
Fab-Tec chutes on Lees-Bradner gear hobber .. .. .	543
Fabbrica Italiana Macchine Aprilia (FIMAP): Olympia numerically-controlled jig borer .. .. .	1316, 1458
Fabryka Automatow Tokarskich Factory: BP-U sliding-head automatics .. .. .	362
Face-turning lathe. Polish-built Preba type TR 70C .. .. .	361
Facing and centering machine. +GF+/ Grob type ZM .. .. .	530
Facing and centering machine. Meddings .. .. .	484
Facing head. Kennametal boring and Fairley Surveys, Ltd.: Electronic event timer .. .. .	73
Famco Machine Co.: Type 112-21M vertical milling machine arranged for fully-automatic profiling .. .. .	1390
Fan heaters. Producing tangential-flow .. .. .	404
Famco-220 continuous-path control system .. .. .	26
Fasteners. Exhibition of American industrial, at U.S. Trade Center .. .. .	718
Fasteners for heavy duty. Ardelok .. .. .	1374
Fawcett Preston & Co., Ltd.: Greer-Mercier hydro-pneumatic accumulator on Webster & Bennett boring and turning mills .. .. .	272
Mini-cushion accumulator .. .. .	185
Fawick Corporation: Fawick Airflex Divn.: Clutches and brakes .. .. .	290
Fawick International S.A. .. .. .	290
Federal Products Corp.: The Dimensional differential system of air gauging .. .. .	1263
136B-3 electronic master comparator .. .. .	435
Feed, automatic adjustment of, in accordance with motor power input and tool vibration. Radartronic unit providing for .. .. .	997

	PAGE		PAGE		PAGE
Feed control unit with interchangeable trip drums. Singer hydraulic ..	636	Ultramid (Badisches Anilin & Soda-Fabrik) ..	168	Ford Motor Co., Ltd.:	
Feed extension unit. Mercer capstan lathe bar ..	42	Welding advances with CO <sub>2</sub> (Distillers Co.) ..	735	Installation of Buhr transfer machines for operations on cylinder blocks ..	1284
Feed slide unit. Standard Singer ..	636	Wickman films ..	219	Large conveyor installation by Hall Engng. ..	332
Feed stroke length, adjustment of roll, Bliss Power-Micro equipment for, while press is in operation ..	1057	Filter. Midac Reverse air fabric ..	1363	Large Diskus grinding machine installation for cylinder block castings ..	992
Feed unit. Bellows Valvair drilling machine ..	289	Filtration Service Engineering, Ltd.: Magnetic swarf conveyor and filter ..	664	Moldmaster machine installation arranged to accommodate four different patterns at one time ..	1287
Feed unit. Brown & Ward automatic magazine bar ..	1438	Fine-Adjust boring bar. Warner & Swasey ..	1388	Production of exhaust manifolds for Ford cars by Helliwells, Ltd. ..	409
Feed unit for cold extrusion presses. Transfer ..	198	Fine-blanking presses. SMG large-capacity ..	562	Ford Werke A.G.:	
Feeds. Some unusual methods for applying fine increments of ..	1299	Fine-blanking. Research into ..	1049	USI Changematic press line in the Cologne factory ..	1003
Feeding coiled strip to presses. Combined decoller and straightening machine for ..	1142	Fine-boring machine. H.P.E. unit-construction ..	529	Forestal Industries (U.K.), Ltd.:	
Feeding unit. Vibratory bowl No. 8 T.I.M. instrument for checking tooth spacing ..	349	Fine-boring machines. H.P.E. ..	640	Cruikshanks Divn.:	
Feintool AG. ..	562	Finl-Shear machine for shear finishing spur and helical gears. Fellows ..	608	New fully-immersed plating barrel ..	300
Fellows Gear Shaper Co.:		Finimeric positioning unit ..	774	New plating solutions ..	1324
Finl-Shear machine for shear finishing spur and helical gears No. 8 T.I.M. instrument for checking tooth spacing ..	607	Finish. Surface, obtainable with abrasive machining ..	179	Forging. High-velocity ..	228
Ferracut Machine Co.:		Finishing of carbide punches and dies. Diamond ..	313	Forging machine. D.F.R.A. small experimental high energy-rate ..	1377
30-ton press with Polydyne drive ..	1273	Finishing machine. Carborundum vibratory ..	925	Forging press. Firth Brown install 800-ton Loewy ..	557
Ferranti, Ltd.:		Finishing machine. Vanco Flexiband No. 1 abrasive-band ..	416	Forging process. "Warm" ..	1379
Cabinet containing Scope numerical point-to-point control equipment ..	1313	Finishing machine. Vanco transportable barrel ..	351	Forgings. Large aluminium alloy, for Saturn V rocket ..	209
Continuous-path control system ..	27	Finishing. metal, Winna programmed batch transfer system for ..	703	Forgings of maraging steel, Large Form grinding wheels. Single-layer diamond ..	871
Magnetic tape equipment on Hayes Tapemaster and Tracemaster machines ..	1219	Finishing rotors and rings for hydraulic motors on a Peter Wolters lapping machine ..	331	Forming. High-energy-rate ..	228
Numerically-controlled machining at the Crewe Toll factory ..	490	Firth Brown, Ltd.:		Forming machine, high-energy-rate, installed at works of B.S.A. Forge Ltd. Fielding & Platt Dynapak ..	1457
Scope tape-controlled co-ordinate positioning equipment ..	481	Installation of 800-ton Loewy forging press ..	557	Forming machine with urethane roll ..	186
Scope 200 series numerical control equipment on Vero 1000 series turret drill ..	1089	Firth-Vickers Stainless Steels, Ltd.:		Forming machines. MBM type-AVM trimming and ..	485
Ferro-Prime, Ferrophos and Ferropro anti-corrosion products ..	68	Pressure vessel fabricated from stainless steel plate ..	726	Formsprag Co., U.S.A. ..	322
Ferro-Tic C machinable carbide for carton dies ..	580	Fischer, Georg, A.G.:		Fortis hydro-pneumatic cylinder ..	659
Ferro-Tic punches. Notching with ..	315	+GF+/Grob type ZM facing and centring machine ..	530	Fortuna-Werke Spezialmaschinenfabrik AG.:	
Fiat Works:		Type KDM 9/80 copy turning lathe ..	455	Type AFD 350/1000 AN cylindrical grinder with numerical control ..	775
Automated cold-extrusion line for producing five sizes of gudgeon pins ..	38	Flame cutting machines for continuous casting plant. Automatic ..	1275	Fosdick Machine Tool Co.:	
"Fibre optics" development ..	558	Flame-cutting torch set. Suffolk Iron Foundry type S.I.F. Silver-streak 1000 welding and ..	184	Fosmatic type 56 tape-controlled jig borer ..	1387
Fielding & Platt, Ltd.:		Flame profiling machine. Savings effected with Hancock Han-co-sine ..	920	Type V56 Tape-Drill 3-in. tape-controlled drilling machine ..	1152
Dynapak high-energy-rate forming machine installed at B.S.A. Forge Ltd. ..	1457	Flame-spraying unit. Meteco low-cost plasma ..	804	Foundry plant for Czechoslovakia. Automatic ..	614
2,750-ton extrusion press installed at High Duty Alloys, Ltd. ..	1102	Flat surfaces. Hill Acme structural milling machine for large ..	605	Foundry. S.I.M.I. Milan, Pressure die casting in the ..	201, 707
Filing cabinet. Admel Monarch ..	301	Flaw detecting unit. Ultrasonoscope automatic ultrasonic ..	757	Fraser, Andrew, (Ealing), Ltd.:	
Filing. Didacton tic-tac equipment for training in methods of metal ..	657	Flaw detection. Portable ultrasonic pulse-echo unit for ..	374	Pneumol air-hydraulic fluid pressure generator ..	1224
Filmatic cylindrical grinder. Cincinnati ..	90	Flaw detector for inspecting ground cylindrical parts. Sheffield optical ..	689	Frautschi & Monney:	
Filmatic Twin Grip centreless grinders. Cincinnati ..	475	Flexiband No. 1 abrasive-band finishing machine ..	416	Posalux Copy for drilling machine for printed circuits ..	257
Films:		Flexiband bench-type abrasive-belt deburring and polishing machine ..	351	Free-wheel unit. Ringspann ..	265
Application of type 1070 production cylindrical grinder (Jones-Shipman) ..	838	Flexiprint flexible printed circuits ..	637	French developments in numerical control systems ..	134
Austenitic cast irons (International Nickel) ..	1065	Flexyfinger handling tool ..	883	Friction welding machine. "A.I. Welders" type FW/6 ..	84
Cauldron bubble (United Steel) ..	168	Flight Refuelling, Ltd.:		Friction welding machine for transmission-shaft assemblies. Steelweld fully-automatic ..	816
The Clarkson story (Clarkson Engineers) ..	1401	Industrial Electronics Divn.:		Frigidaire axial type compressor. Production of the ..	1076, 1300
Conduits of steel (British Electric Conduit Mfrs.) ..	276	Hamlin reed switches and their application ..	73	Frigidaire refrigerators. Making cabinet doors for ..	740
Flame plating (Union Carbide) ..	1345	Overload protection unit ..	91	Frigidaire refrigerators. Making condensers for ..	60
Permanent magnets (English Steel Magnet Corp.) ..	1069	Floor cleaner. "Progress Universal" ..	306	Fromag broaching and keyseating machines ..	485
Pulsed-arc welding (British Oxygen) ..	52	Flooring for light engineering shops. Plastik ..	1438	Fromag type DP 15/2000 straightening press ..	654
"Rank" industrial training films ..	276	Flow turning lathe, Kellinghaus spinning and, for Boeing ..	71	Froriep, G.m.b.H.:	
Semi-automatic welding (British Oxygen) ..	52	Fluid 902. Shell Iru hydraulic ..	529	Contour turning and milling machine for Boelco ..	71
Survey of automatic welding (British Oxygen) ..	52	Fluid logic system. "Maxam Power" Maxalog ..	610	Hydrostatic bearings for a lathe headstock ..	1392
Thin film microcircuits ..	168	Fluid pressure generator. Pneumol air-hydraulic ..	1224	Funditor, Ltd.:	
		Fluid. Rapid Tap cutting ..	75	Melting pots ..	1252
		Fontargen surfacing alloys. New ..	1395	See also ..	1157

	PAGE		PAGE		PAGE
Furnace for aluminium holding and melting. Heatlock gas-fired ..	10	Gear hobbing machine. British-built Lees-Bradner type 7HD ..	542	Geneva wheel. Profiledata programming of a ..	494
Furnace. B.E.P. controlled-atmosphere bright annealing ..	14	Gear hobbing machine. Kashifuji KS-14 high production ..	85	German industrialists. Visits by, to works of:	
Furnace demonstration. Heatlock low pressure die casting ..	715	Gear hobbing machine. Lees-Bradner type 9HYD vertical production ..	598	Adcock & Shipley, Ltd. ..	49
Furnace element. Torvac 18-in. vacuum unit and ..	868	Gear hobbing machine. Lees-Bradner type R Mk.11 heavy-duty ..	418	Thos. Ryder & Son, Ltd. ..	102
Furnace fired by fuel oil. Morgan Bale-O-Matic ..	33	Gear hobbing machine. Mikron type 79 ..	419	Snow & Co., Ltd. ..	157
Furnace. Heatlock automatic melting and holding ..	946	Gear hobbing machine. Russian-built Kolomensk type 5345 universal ..	82	Giddings & Lewis Machine Tool Co.: Exhibit at the Poznan Fair ..	213
Furnace. Royce vacuum sintering ..	314	Gear hobbing machine. New Churchill crown, spherical and taper ..	933	Horizontal boring machines for machining large castings for paper-making machines ..	822
Furnace for universal testing machines. Avery ..	1327	Gear hobbing and thread milling machine. Lees-Bradner type 5A combined ..	950	Giddings & Lewis Machine Tool Co.: DiMil 3-axis contour milling and die sinking machine ..	584
Furnace for use in production of SG irons. Monometer rotary ..	1275	Gear inspection machines. "Illinois Tool Works" automatic final ..	1000	H-type horizontal boring, drilling and milling machine ..	585
Furnaces. Barlow-Whitney electrically-heated ..	1061	Gear roughing machine. Gleason No. 606 hypoid ..	1055	Horizontal borer with Bunker-Ramo control ..	525
Furnaces. Electrode counterbalancing arrangements for direct arc ..	1328	Gear shaping process. The - some special applications ..	1208	"Jig borer" horizontal machine with laser interferometry equipment for checking accuracy of table positioning under numerical control ..	996
Fusewelder. Colmonoy type S100 ..	1034	Gear shaving machine. Red Ring Super-Speed ..	996	NumeriCenter-H horizontal-spindle machine ..	584, 952
Futurmill Conversion, Ltd.: Plans for building plano-milling machines ..	614	Gear tester. Crown involute ..	140	NumeriCenter type 70 numerically-controlled machining centre ..	704
		Gear, 3½-in. single-helical, cut on a Liebherr L 301 hobbing machine ..	1454	Gilman Engng. & Manfg. Co.: Automatic machine for assembling brake drums and wheel hubs ..	982
<b>G</b>		Gears. Fellows Fini-Shear machine for shear finishing spur and helical ..	608	10-station transfer machine for automatic assembly of connecting rods ..	153
G.A.G. type GP 500 optical marking-out and inspection equipment ..	414	Gears. helical, Set-up on Kashifuji high production gear hobber for cutting ..	85	Gisholt Machine Co.: Simplimatic chucking lathes for machining brake drums ..	930
G.E.C. (Engineering), Ltd.: Coin blank handling equipment at the Royal Mint ..	1258	Gears. High-speed hobbing of steel ..	36	Gilman Mig. & Engng. Divn.: Machine for assembling brake drums and wheel hubs ..	982
+GF+ type KDM 9/80 copy turning lathe ..	455	Gears. Numbers of teeth in ..	1333, 1459	Glass fibres for light transmission ..	558
G.K.N. Bolts & Nuts, Ltd.: Pilgrim nut with built-in hydraulic jacks ..	665	Gearbox. Beard & Fitch small reduction ..	265	Gleason Works: No. 606 gear rougher and No. 607 Helixform finisher ..	1055
G.K.N. Screws & Fasteners, Ltd. ..	721	Gearbox components, Lapping, on T2-in. Lapmaster machine ..	1008	Godfrey, R.E., Ltd.: B.C.A. off-set boring heads and clamping set ..	1103
G.K.N. type A.2 spark-machining unit ..	1147	Gearbox die casting for French motor car ..	710	Gold plating processes. New ..	10
G.M.T. Precision Engineers, Ltd. ..	349	Gearbox and final transmission unit for Italian motor car. Die cast ..	713	Gorton milling machine with Bunker-Ramo control for continuous-path contouring operations ..	526
+GF+Grob type ZM facing and centring machine ..	530	Gearboxes for paper-making machines, Machining large castings for, on G & L-Fraser horizontal borers ..	822	Gosselaar's Industrie en Handelsonderneming n.v.: Cosmeta power presses ..	544
Gamma Rays, Ltd.: Gamma radiation equipment for radiographic non-destructive testing ..	1230	Gehring vertical honing machine ..	578	Cosmeta power presses ..	544
Garbrooke Trading Co.: Anglox locking joint ..	1394	Geisler, O. & K., G.m.b.H.: Progressive press tools with tungsten carbide inserts ..	818	Cotaverken AB: Production of auxiliary equipment for ships ..	340
Gate Machinery Co., Ltd. ..	366	General Electric Co., U.S.A.: Accupin control system ..	29	Grading motor car pistons. ATAG equipment for ..	1172
Gauge. Helios dial indicator caliper ..	504	Control systems on machines at Brussels Exhibition ..	1214, 1216	Graffenstaden type FB 616 SD CN ram type milling machine with Plessey Mark III tape control system ..	1318
Gauge. Rubert surface-roughness ..	545	Control systems on machines at Chicago Machine Tool Show 590, 594, 596, 600, 601, 692, 695, 999, 1054, 1150, 1152, 1271, 1386 ..		Graffenstaden type TVFA 121 H vertical boring mill with G.E. Mark 1008 continuous-path control ..	1214
Gauge. Setting, for boring tools ..	288	Manufacturing agreement with Tube Investments, Ltd. ..	1059	Granby, Paul, & Co. Ltd. ..	38, 313
Gauge and Tool Makers' Association: 11th Craftsmanship and Draughtsmanship Competition ..	1011	Mark 100S control system ..	31	Gratings, diffraction, Ruling master ..	302
Gauge. Stayput dial indicator ..	750	Mark Century continuous-path control system ..	29, 45	Gray, G.A., Company: * Driving arrangements for table of planing machine ..	35
Gauges. Use of Visigauge pulse-echo, for checking dimensions of integrally machined airframe part ..	374	Mark Century solid-state numerical control system on Churchill-Redman P5 lathe ..	327	880 FC 6-in. spindle floor-type horizontal borer ..	594
Gauges. Producing Shardlow micrometers and height ..	235	Polydyne drive on Ferracute press ..	1273	Handymill openside plano-milling machine ..	594
Gauges. Tungsten carbide ball plus ..	861	General Motors Corporation: Buick Divn.: Installation of Gilman machine for assembling brake drums and wheel hubs ..	982	Series 60 vertical boring and turning mill ..	594
Gauging. The Dimensionair differential system of air ..	1263	Frigidaire Divn.: Making cabinet doors for refrigerators ..	740	Grease. Ambersil MS4 silicone, Protecting machinery with ..	263
Gauging equipment. Spark machining grooves in pneumatic ..	1146	Making condensers for refrigerators ..	80	Greer-Mercier hydro-pneumatic accumulator on Webster & Bennett boring and turning mill ..	272
Gauging installation for crankshafts. Sigma ..	815	Production of axial type compressors ..	1076, 1300	Grimar type EA 8-600 automatic notching press ..	1093
Gauging installation. M.P.J. automatic liner ..	578	Hydra-matic Divn.: Deburring costs reduced by electro-chemical machining ..	152	Greer-Mercier Mini-cushion accumulator. Fawcett Preston ..	185
Gauging. Optical profile ..	883	Research Laboratories: New oil seal designs ..	1096		
Gauging and sorting manually-loaded parts. Compac equipment for ..	1222	General Motors, Ltd.: New oil seal designs ..	1096		
Gdansk Shipyards: An arc de-scaling arrangement ..	520	Generating sets. New Petbow diesel ..	1336		
Gear cutting machine. Russian-built type 530P ..	82	Generator. Pneumol air-hydraulic fluid pressure ..	1224		
Gear cutting tools ..	752, 862, 1123, 1208	Generators. New ranges of Crompton Parkinson a.c. motors and ..	178		
Gear finishing machine. Gleason No. 607 Helixform ..	1055				
Gear form on lengths of bar. Landis Hy-Duty machine for producing a helical ..	1151				
Gear grinding machine. Kolb type KHZ generating ..	1422				

	PAGE		PAGE	H	PAGE
Grimston Electric Tools, Ltd.:		Grinding machine, Schaudt type ERS		H-Drive variable-speed drive unit.	
Co-ordinate setting table incorporating		cylindrical, with automatic work-	534	Heynau	1422
A. E. I. punched-tape digital control		loading equipment	98	P. & H. Machine Tool Co., Inc.:	
system	43, 105	Grinding machine for sheet edges. Moon		Angstromatic precision boring,	
Grinder. Type 436-B Linisher		automatic	667	facing and turning machine	999
abrasive-belt	382	Grinding machine. Snow 30-in. double		HJ type 300 slotting machine	95
Grinding. centreless. Factors affecting		disc	667	H. M. A. Machine Tools, Ltd.	240
the achievement of roundness by	984	Grinding machine. Snow type CSG 36-in.		H. M. E. type G open-fronted inclinable	
Grinding elliptical pistons. Landis type		heavy-duty coil spring end	667	presses	48
R machine for	1390	Grinding machine. Stuart Davis type		H. P. E. unit-construction fine-boring	
Grinding head for Cornac Stabimajor		horizontal table rotary surface	666	machine	529
borer	1438	Grinding machine. Snow type SG 72/25		Habegger, Jos., A. G.:	
Grinding head for use on planing machine.		openside slideway	666	Camless automatic turret lathe	460
Boehlinger 2-spindle	1370	Grinding machine. spline, Russian-built	80	Hagglund Industrial, Ltd.:	
Grinding. High-speed	1243	Grinding machine. Stuart Davis type		Automatic welding machine for	
Grinding installations. Extension to		418-U universal	261	reclaiming tractor components	1194
Hoffmann automatic	125	Grinding machine. Studer RHU 500		HALCOdri printing machine. Halden	553
Grinding machine. Agathon type 150-SL		hydraulic universal	1114	Halden, J., & Co., Ltd.:	
centreless	1116	Grinding machine. Swiss-built Tripet		HALCOdri diazo printing machine	553
Grinding machine. Arboga type BEP 308		Grinding machine. Taft-Peirce No. 2	702	Hall Engineering Co., Ltd.:	
twist drill	99	surface	1386	Conveyor installation at Ford Motor	
Grinding machine. Barnes T-18 Tri-Matic,		Grinding machine. Thompson type PC	1154	Co., Ltd.	332
with oscillating belt	601	24- by 36- by 96-in. surface		Hallsworth automatic foundry plant	
Grinding machine for brake discs.		Grinding machine. Van Norman No. 3C-12		for Czechoslovakia	614
Rowland duplex	1139	centreless	591	Hamilton Standard Division,	
Grinding machine. Brierley Rotacone		Grinding machine. Wotan type SHA		United Aircraft Corp.:	
twist drill	478	205/8 G internal and face	1434	Electron beam welder tables fitted	
Grinding machine. Browne & Sharpe		Grinding machines for bearing rings.		with Roundway bearings	1396
type 1018 automatic cycle cylindrical,		Novamatic internal	475	6-kW. electron beam welder	1253
with automatic loading equipment for		Grinding machines. Churchill type TWB		Hamlin reed switches and their	
handling diesel engine pistons	997	and TWR heavy-duty roll	758	application	73
Grinding machine. Brown & Sharpe type		Grinding machines. Cincinnati Filmatic		Hammer boards. Rytex drop	249
1018 automatic-cycle cylindrical	586, 998	TwinGrip centreless	475	Hammer. Thor pneumatic chipping	348
Grinding machine. Caledonian type 55		Grinding machines. Hartex type RH 4		Hamworthy Engineering, Ltd.:	
Profile Accurascope, for sharpening		hydraulic cylindrical	477	Installation of Vero 18-spindle	
grinding tools	1084	Grinding machines. Installation of		tape-controlled Autodril for	
Grinding machine. camshaft, Russian-		Wickman optical profile at Brock	1338	operations on valve spools	269
built Kharkov	81	Tools, Ltd.		Hancock & Co. (Engineers), Ltd.:	
Grinding machine. Carborundum-Kewa		Grinding machines. Kellenberger type	473	Han-co-sine flame profiling machine	
abrasive-belt	924	600R and 57W		installed in K. & L. Steelfounders	920
Grinding machine. Churchill crankshaft		Grinding machines. M. S. O. type R	479	Handle. 10-impression mould for	
journal	761	cylindrical		phenolic resin	215
Grinding machine. Cincinnati Centuramic		Grinding machines. steel slab, Dust	352	Handling equipment, G. E. C. coin	
centreless	540	extraction installation for	471	blank, at the Royal Mint	1258
Grinding machine. Cincinnati Filmatic		Grinding machines. Voumard internal		Handling equipment, Oldham Little	
cylindrical	88	Grinding machines. Wickman-Scrivener		Giant jig and die	1328
Grinding machine. Cincinnati 10- by		duplex. Some work-handling arrange-	901	Handling large quantities of cast	
18-in. "straight" plunge	1389	ments for		pipes	69
Grinding machine. Cornet precision		Grinding punches. Anysizer attachment	1319	Handling tool for small parts.	
cylindrical	656	for	187	Flexflyer	883
Grinding machine. Dormer type 78		Grinding unit. Cleco type 500 hand		Handymill openside plano-milling	
twist drill	477	Grinding unit for mounting on tool-slide of	925	machine. Gray	595
Grinding machine. Elb-Schliff rotary-		planing machine or lathe. Carborundum		Hannfin Press Co.:	
table surface	541	Grinding wheels. Dressing crankshaft,	346	Hy-Power cold riveting equipment	720
Grinding machine. Ewag type WS 11 tool		with Triefuss diamond tools	764	Hansen couplings with B.S.P. threads	192
and cutter, modified for production of		Single-layer diamond	530	Hard-facing dragline roller shafts	420
very small tools for spark erosion		Grob, +GF+/, type ZM facing and		Hardening and brazing machine.	
of minute profiled holes	1115	centring machine	1146	Dusseldorf Duromat induction	486
Grinding machine. Herminghausen type		Grooves in pneumatic gauging members.		Hardening fixture. Wild Barfield	403
SRS centreless	473	Spark machining		Harding turret lathe with Elliott	
Grinding machine with Hydro-Centric		Grooving operations. All-carbide lathe	1039	sequence control	549
hydrostatic bearings. Springfield type		tool for		Harding type DSM 59 capstan lathe	
1B-TR vertical	1155	Grundig Werke G. m. b. H.:		equipped with Elliott sequence	
Grinding machine installation for cylinder		Numerical control equipment develop-	537	control. Programming for a	917
block castings. Large Diskus	992	ments		Hardings (Leeds), Ltd.:	
Grinding machine. Landis type 4R Size		Numerical control system on Scheu-	1087	Pneumatically-operated counters	664
Finder cylindrical with numerical		Schwartzkopf turret lathe		Hardness standardizing machines.	
control	948	Guard against welding sparks. Cleervue	1094	Avery	259
Grinding machine. MISO type 8-200		Weldguard		Hardness tester. Esway fully-	
automatic bar feed	776	Gudgeon-pins. Automated cold-extrusion	38	automatic Rockwell	830
Grinding machine. Mattison small-		line for producing five sizes of	608	Hare, P. J., Ltd.:	
capacity horizontal-spindle surface.	589	Guide to surface finish. Micrometrical		Type 2 B.S. 2-ton hydraulic press	1044
Grinding machine. Mattison type 84		Guideways, Cylindrical, for machine tools	227	Harper, John, & Co., Ltd.:	
vertical-spindle rotary table surface	589	Guillotine. Edwards Besco-Truecut		Conference on spheroidal graphite	
Grinding machine. Nippei type DSG V-18D		Mark-2 type 8/125 precision	100	iron	1064
double-disc surface	96, 508	Guillotine shears with epicyclic gear		Hartex G. m. b. H.:	
Grinding machine with numerical control.		drive. Rhodes	768	Type RH 4 hydraulic cylindrical	
Fortuna-Werke type AFD 350/1000 AN		Guyson Industrial Equipment, Ltd.:		grinders	477
cylindrical	775	New blast-cleaning machines	97	Hartford Special Machinery Co.:	
Grinding machine. Russian-built type		See also	192	Type 0-400 flat-die thread-rolling	
3701 surface	304			machine	718
Grinding machine. Russian-built Vilnyus				Hatch, George, Ltd.	656
type 3E 153 high-precision cylindrical	304				
Grinding machine. Russian-built Vilnyus					
cylindrical	79				



	PAGE		PAGE		PAGE
Hawker Siddley Dynamics, Ltd.:		Henschel-Werke A.G.:		Holder for screwed-shank tools.	
Electron beam welding equipment	84, 1253	Type F 081d twin-head open-sided		Dormer series 2 Heli-Matic ..	263
Hayes Engineers (Leeds), Ltd.:		plano-milling machine with Contraves		Holmaster co-ordinate drilling and	
Components produced by continuous-		tape control equipment ..	1068	boring machine. Torshälla ..	887
path and copy milling operations on		Hepworth Iron Co. (Engineering), Ltd.:		Hollow-milling plastics with a Landis	
Tapemaster and Tracemaster		Types 1200, 1800 and 2400 hydraulic		diehead ..	200
machines ..	1219	copying units for lathes ..	768	Holroyd, John, & Co., Ltd.:	
Hayes-Ferranti Tapemaster machine		Herbert, Alfred, Ltd.:		Duplex milling machine ..	256
installed at Ferranti works ..	491	2D capstan lathe used for machining		Holtite Tapite thread rolling screws ..	721
Head, Multi-spindle, and indexing		ocular bodies ..	1085	Honeywell Controls, Ltd.:	
table. Inca ..	214	Producing components for Herbert		New scientific instruments ..	1328
Head, Rambaudi universal swivelling,		capstan and other lathes ..	1020	Honing hydraulic valves on Delapena	
for milling machines ..	534	Setting templates on a 47V vertical		vertical machine ..	47
Head Wrightson Machine Co., Ltd.:		milling machine reduce changeover		Honing machine. Barnesdrill type	
Arrangements for building Verson		time ..	368	244 vertical ..	1270
presses in U.K. ..	722	Visit by party of 47 Dutch engineers	1285	Honing machine. Gehring vertical ..	578
Headland Engineering Developments,		See also ..	254, 396, 463, 587, 607,	Honing machine. Micromatic prototype	
Ltd.:		995, 1051, 1122, 1151, 1267, 1438		electrolytic ..	591
Specialty-built ultrasonic cleaning		Herbert, Edward G., Ltd ..	199	Honing machine. Perfection type PE6	
unit ..	371, 510	Herga Electric, Ltd.:		vertical ..	471
Transmission Divn.:		Waterproof foot switch ..	1395	Honing, micro-, brake drums.	
Variable-speed drive unit ..	1384	Herion, Erich:		Micromatic Hydrohoner machine	
See also ..	1217	Control system for a power press	34	for ..	415
Headstock. Hydrostatic bearings for a		Hermes typewriters:		Hook-Tooth bandsaws. Starrett ..	35
Froriep lathe ..	1392	Assembly and checking operations		Hoover, Ltd.:	
Heald Machine Co., U.S.A.:		on typebars and segments ..	172	Assembling automatic timers for	
Headmill type 2053 drilling, boring		Final assembly and finishing		Keumatic washing machines ..	116
and milling machine with Cincinnati		operations ..	1244	Hopkins Gear Services, Ltd. ..	1454
Acromatic 3-axis punched-tape		Production of typebars ..	4	Hordern, Mason & Edwards, Ltd.:	
control ..	995	Herminghausen type SR5 centreless		Coinmaster No. 2 minting press	1093
Heald Machines, Ltd.:		grinding machine ..	473	Type G open-fronted inclinable	
Type 251-A vertical Bore-Matic ..	530	Hessische Apparatebau G.m.b.H.:		presses ..	468
Heat exchangers. "Hirst Electronics"	324	Hessapp type 75 FKS vertical die		Hose. Nylon coiled ..	1396
Heat exchangers. Superheater auto-		milling machine ..	777	Hot brass stamping press, Wilkins &	
matic welding equipment for ..	408	Hexagon-turning attachment.		Mitchell, with sub press ..	539
Heat treatment of auxiliary equipment		MAS Kovosil ..	1281	Hover pulleys ..	883
for ships. Some special units for ..	340	Hexplugs. Blacker ..	988	Howard, Stanley, Ltd. ..	408, 888, 1432
Heat treatment process. Elquench	882	Heyligenstaedt & Co. Werkzeugma-		Howden, James, & Co., Ltd.:	
Heater. Maywick type FHI blown-air	650	schinenfabrik G.m.b.H. ..	777	Large-capacity screw compressor	86
Heater. Powmatic type CA-200 air	1424	Heynau H-Drive variable-speed		Humidity controls. Trist-Sauter ..	425
Heaters. Producing tangential-flow		drive units ..	1422	Hungarian automatic sculpting	
fan ..	404	High Duty Alloys, Ltd.:		machine ..	1391
Heathway Machine Sales, Ltd. ..	1088	Connecting rods ..	86	Hungarian-built semi-automatic	
Heating controls. Trist-Sauter ..	425	Increased extrusion facilities at		copying lathe ..	240
Heating equipment. Exhibition of		Distinction works ..	1102	Huré, Ets, P.:	
Barlow-Whitney process ..	1060	High-energy-rate forging machine.		Type 535 universal milling machine	409
Heating. New system of industrial		D.F.R.A. small experimental ..	1377	Hy-Draulic Synchro Trace machine for	
radiant ..	979	High-energy-rate forming ..	226	production of deep die and mould	
Heating system. Radco hot-oil		High-energy-rate forming machine		cavities. Rockford ..	693
industrial ..	878	installed at works of B.S.A. Forge		Hy-Duty machine for producing a	
Heatlock Industrial Furnaces, Ltd.:		Ltd. Fielding & Platt Dynapak	1457	helical gear form on lengths of bar.	
Automatic melting and holding		High Precision Equipment, Ltd.:		Landis ..	1151
furnace ..	946	Recent activities of the Company	638	Hy-Power cold riveter ..	720
Electric resistance-heated low		Unit-construction fine-boring		Hydra-Matic Division of General	
pressure die casting furnace ..	715	machine ..	529	Motors Corp.:	
Gas-fired furnace for aluminium		See also ..	1386	Deburring costs reduced by electro-	
holding and melting ..	10	High-velocity forging ..	228	chemical machining ..	152
Hedley, R., A.M.I. Prod.E.:		Hilger-Watte cam profile measuring		Hydra-Pnu tube bending machine.	
A projected experimental numerical		machine with automatic print-out ..	1332	Wallace 1100 series ..	197
control system ..	131	Hill Acme Co.:		Hydraquip, Ltd.:	
Heidenhain, Dr. Johannes:		Structural milling machine for large		Hyvarmill hydraulic milling head	
RON incremental encoder ..	1317	flat surfaces ..	605	for use on planing machines ..	974
Heinemann, Gebr., A.G.:		Hillyer Corporation:		Hydrashear, Elga, exhibited at	
Type DN 300 automatic turret lathe		Type E40-TCC machining centre with		Chicago Show ..	895
with G.E. Mark 100S continuous-path		Bunker-Ramo 3100 continuous		Hydraulic check valves. Ellison ..	825
control equipment ..	1216	path control ..	1266	Hydraulic copying units for lathes.	
Heidenreich & Harbeck:		Hindustan Machine Tools, Ltd.:		Hepworth types 1200, 1800 and 2400	766
VDF E3H/NC prototype lathe ..	1370	Activities of the Company ..	1320	Hydraulic cylinders. Ellison low-	
VDF type 18/21 RO lathe ..	1373	Hirst Electronics, Ltd.:		pressure ..	1258
Heli-Matic holder for screwed-shank		Heat exchangers ..	324	Hydraulic cylindrical grinders.	
tools. Dormer series 2 ..	263	Hitachi Zosen:		Hartex type RH4 ..	477
Helios dial indicator measuring		Large roller bending press ..	127	Hydraulic motors. Finishing rotors and	
instruments ..	504	Hob setting. Wooden mock-up assists	234	rings for vane-type, on a Peter	
Helixform gear finisher. Gleason		Hobbing machines, Wormwheels cut on		Wollers lapping machine ..	331
No. 607 ..	1055	Churchill, with variable feed rates	359	Hydraulic copying lathe. Pilote type S	134
Heller numerical control equipment		Hobbing of steel gears. High-speed	36	Hydraulic feed control unit with	
on Boehringer lathe ..	1371	Hoffmann Manufacturing Co., Ltd.:		interchangeable trip drums.	
Helliwells, Ltd.:		Extended range of tapered roller		Singer ..	636
High-output techniques for production		bearings ..	377	Hydraulic feed slide unit. Standard	
of exhaust manifolds ..	409	Extension to automatic grinding		Singer ..	636
Installation of Brookes automatic		installations ..	125	Hydraulic fluid. Shell Iru ..	529
tube cutting equipment ..	833	Set-up on Swift lathe for machining		Hydraulic lift tables for machine tool	
Nemmings, Ltd.:		outer ring of support bearing for		assembly ..	17
Installation of B.E.P. controlled-		Senzimir rolling mill ..	783	Hydraulic press. Hare type 2 B.S.	
atmosphere bright annealing furnace	14	Hofmann, Maschinenfabrik Dionsy:		2-ton ..	1044
Henderson & Keay, Ltd. ..	782, 1140	Types WR and EMT dividing units	650		

	PAGE		PAGE		PAGE
Hydraulic presses. Nordberg, Special technique for producing tubular T-pieces of copper on . . . . .	1054	Imperial Aluminium Co., Ltd.		Inspection methods employed in the production of OMT rotary tables . .	516
Hydraulic pump. Sutcliffe 6-cylinder .	1165	Aluminium-strip continuous coating installation . . . . .	784	Inspection room. A controlled-environment . . . . .	1260
Hydraulic pumps and ram units.		Superspeed 946 free-cutting aluminium alloy . . . . .	1034	"Inspector" type 26-16 3-dimensional inspection machine. Olivetti . .	1315
Hydrodyna . . . . .	1223	Imperial Metal Industries (Kynoch), Ltd.: New process for rolling thin metal sheet . . . . .	150	Institution of Production Engineers annual dinner . . . . .	1283, 1341
Hydraulic pumps. New Towler in-line hydraulic slide unit for transfer machines. Polish . . . . .	365	Eley Ammunition Group: Installation of Chappuis transfer press for production of one-piece heads for cartridge cases . . . . .	612	Instrument supporting stand. "Polar Hydraulics" . . . . .	72
Hydraulic slide units. Polish-built .	366	Use of plastics extruding machine for cartridge cases . . . . .	1225	Instrumetron, Ltd.: New low-height bench centres . .	196
Hydraulically-operated cold riveting equipment . . . . .	720	Imports. British machine tool . . . . .	391, 511, 903, 1231, 1289	Insulation, Epoxy, for electrical machines . . . . .	75
Hydraulically-operated copy shaping machine. Russian-built Kirov . .	83	Classified: . . . . .	110, 222, 446, 678, 846, 1182, 1350	Insulation system. Thermalastik electrical . . . . .	1066
Hydraveral hydraulic shear. Rhodes 8-ft. . . . .	483	Imports and exports of manufactures . .	851	Interferometer, Application of a Cutler-Hammer laser, in connection with machine tool development . . . .	1401
Hydro-Centric hydrostatic bearings. Springfield vertical-spindle grinder with . . . . .	1155	Impregnated Diamond Products, Ltd.: Metal-bonded diamond wheel . . .	324	Interferometer equipment, Cutler-Hammer laser, on Giddings & Lewis "jig borer" machine for checking accuracy of table positioning under numerical control . . . . .	997
Hydro-pneumatic cylinder. Fortis .	659	Impregnation of castings. On-site . .	829	Interferometry. Machine for automatic measurement of scales by laser . .	730, 780, 795
Hydrodyn hydraulic pumps and ram units . . . . .	1223	Inca Engineering Co.: Multi-spindle head and indexing table . . . . .	214	Interlas, Ltd.: Beetle variable-speed tractor unit for welding and cutting torches . . .	896
Hydrohoner machine for micro-honing brake drums. Micromatic . . . .	415	2-spindle tapping head . . . . .	214	International Computers & Tabulators, Ltd.: Automated industrial drilling service . .	1066
Hydrokop-Universal out-of-round hydraulic copying attachment. Boehringer . . . . .	1372	Inchworm precision linear actuator .	1053	International General Electric Co. of New York, Ltd. . . . .	29, 31, 1214
Hydrostatic bearing. An interface restrictor . . . . .	1095	Indexing, over-running and back-stopping. Sprag clutches for . . . . .	322	International Meehanite Metal Co. Ltd. .	376
Hydrostatic bearings for a lathe headstock . . . . .	1392	Indexing table. Electromagnetic clutches and brakes for rotary . . . . .	939	International Nickel, Ltd.: Ductile cast iron - probable pattern of development in various fields . .	1274
Hydrostatic bearings. Springfield type 1B-TR vertical-spindle surface grinder with Hydro-Centric . . .	1155	Indexing table. Hofmann type WR circular . . . . .	658	Large forgings of maraging steel . .	871
Hydrostatic flow-line for lathe assembly at Colchester Lathe Co. . . . .	158	Indexing table. Inca multi-spindle head and . . . . .	214	Film: Austenitic cast irons . . . .	1064
Hydrostatic variable-speed drive. DoALL Continental 2 Production Saw incorporating . . . . .	604	Indexing table. Moore type 1440 precision .	1167	New primary nickel . . . . .	1449
Hydrospe type 224 drilling, tapping and boring machine with numerically-controlled table positioning. Brown & Sharpe . . . . .	586	Indexing table for multiple tooling on lathes and other machine tools. Snow-Matic .	691	Investment requirements for The National Plan . . . . .	683
Hydullgum densified wood laminate. Drop hammer boards made from . .	249	India. Government-owned machine tool building organisation in . . . . .	1320	Ionic Plating Co., Ltd.: Barrel zinc-plating capacity doubled .	247
Hytex drop hammer boards . . . .	249	Indian Central Machine Tool Institute .	1148	Irie, Herm: Pair of ductile cast iron rolls . .	1274
Hyvarmill hydraulic milling head for use on planing machines . . . .	974	Indiana Welding & Machine Co.: Reclaiming damaged shafts with keyways . . . . .	70	Iron castings. Quality control of . .	59
		Induction hardening and brazing machine. Dusseldorf Duromat . . . . .	486	Iron, Ductile cast - probable pattern of development . . . . .	1274
		Induction-optical angle-measuring table, Russian type OKB-1465 . . . . .	875	Iron, machinability of cast, Tin improves .	35
		Inductive dividing head. Russian type EDG-2 . . . . .	873	Iron. spheroidal graphite, Harper conference on . . . . .	1064
		Industrial Automation & Electronics, Ltd.: Tape control system for machine tools .	379	Ironmaking. A century of, at Appleby-Frodingham . . . . .	1118
		Industrial & Commercial Calculators: Order quantity calculator . . . . .	1045	Irus emulsion type hydraulic fluid 902. Shell . . . . .	529
		Industrial & Commercial Finance Corp., Ltd.: Borrowing and leasing facilities for the smaller firm . . . . .	928	Isherwood, Norman & Co., Ltd.: Set-up for milling the faces of header tanks . . . . .	893
I. A. E. tape control system for machine tools . . . . .	379	Industrial Impregnations, Ltd.: On-site impregnation of castings . .	829	Isothane resilient plastics material . .	922
I. C. I. Fibres, Ltd.: Installation of Barduct busbars ring main system . . . . .	381	Industrial Sales (Machine Tools) Ltd. . . . .	450, 532, 651		
I. C. M. A., Officine: Cophilmatic tape-controlled drilling, boring, tapping and milling machine .	1314	Infra-red camera. Thermograph . . .	1260	J. H. & Co., Ltd. . . . .	295
I. D. P. metal-bonded diamond wheel .	324	Injecta, Ltd. . . . .	185	Jackson, Tottman & Co., Ltd.: 10-impression mould for phenolic resin handle . . . . .	215
I. G. E. (Control Equipment), Ltd.: Quick-acting fail-safe valve . . . .	1424	Injection on pressure die casting machines. High-speed . . . . .	946	Jacoby, Alfred, (Machine Tools), Ltd. Japanese built double-disc surface grinder . . . . .	96
I. G. M. stacking system for unit dies for die casting . . . . .	942	Innocenti-CWB FAF 305/200 universal milling and boring machine installed in English Electric works . . . . .	782	Japanese-built equipment for electro-chemical machining . . . . .	258
IMI (Kynoch), Ltd.: New process for rolling thin metal sheet . . . . .	150	Inserts. T-Sert self-locking threaded .	721	Japanese-built Famuc-220 continuous-path control system . . . . .	26
Eley Ammunition Group: Installation of Chappuis transfer press for production of one-piece heads for cartridge cases . . . . .	612	Inley Industrial, Ltd.: Destaco toggle clamps . . . . .	1061	Japanese horizontal borer. Large . .	1379
Use of plastics extruding machine for cartridge cases . . . . .	1225	Tungsten carbide ball plug gauges .	861	Japanese roller bending press. Large .	127
ITW, Ltd. . . . .	1000	Inspecting convex and concave surfaces. Rotary Talysurf instrument for . .	301	Japanese servo motors . . . . .	412
Ikegal Iron Works: Large horizontal borer . . . . .	1379	Inspecting ground cylindrical parts. Sheffield optical flaw detector for . .	690	Japanese vertical boring mill. Large .	921
Illinois Tool Works, Inc.: Indexing table machine for automatic inspection of helical pinions . . . .	1000	Inspection equipment. G. A. G. type GP 500 optical marking-out and . . .	414	Jenicek, L.: Light alloy castings in the production of the Skoda 1000MB car . . . .	1439
Impact testing machine. Avery type 6704	771	Inspection machine. "Illinois Tool Works" automatic helical pinion . . . . .	1000		
		Inspection machine. Olivetti Inspector type 26-16 3-dimensional . . . . .	1315		
		Inspection machine, Pratt & Whitney .	1189		
		Inspection machine. Russian type 402 bearing ball . . . . .	876		

	PAGE
Jessop-Saville, Ltd.:	
Alloy C steel for tool for producing rotor and stator laminations ..	727
Jessop-Saville (Small Tools), Ltd. ..	315
"Jig borer" horizontal machine with laser interferometer equipment for checking accuracy of table positioning under numerical control.	
Giddings & Lewis .. .. .	997
Jig boring machine. FIMAP Olympia numerically-controlled .. ..	1316, 1458
Jig boring machine. Fosdick Fosmatic type 56 tape-controlled .. ..	1387
Jig boring machine. Kolb type NUCO 70 numerically-controlled .. ..	888
Jig boring machine. Société Genevoise type 5E CN, with Sperry numerical control equipment .. .. .	890
Jig components. Light beam system for aligning large .. .. .	645
Jig and die handler. Oldham Little Giant .. .. .	1328
Jig grinding machine. British-built Moore No. 2 .. .. .	1168
Jig grinding machine. Moore No. 3 ..	1166
Jigmil, DeVlieg type K, equipped for operation by the Tapac IV numerical control system .. .. .	588
Job-O-Matic. The Wavis .. .. .	1132
Jobbing shop. A numerically-controlled Johansson, C. E., (Aldell) Ltd. ..	897
Johnson, Matthey & Co., Ltd.:	
Elkonite-copper bi-metal for electrical contacts .. .. .	650
Sparkonite 10 tubing for spark machining electrodes .. .. .	127
Joint. Anglo locking .. .. .	1394
Jones, A. A., & Shipman, Ltd.:	
New film .. .. .	838
See also .. .. .	416, 591
Jones & Attwood, Ltd.:	
Handling large quantities of cast pipes .. .. .	69
Jones & Lamson, Divn. of Waterbury Farrel:	
Specialmatic numerically-controlled turret lathe .. .. .	1385
Jones, Sidney G., Ltd. .. .. .	479, 776, 788
"Junior" universal lathe. Weisner ..	456

## K

K. & L. Steelfounders & Engineers, Ltd.:	
Savings effected with Hancock Han-cosine flame profiling machine .. ..	920
Kalibr Instrument Works, Moscow:	
Type 402 bearing ball inspection machine .. .. .	876
Kashifuji KS-14 high production gear hobbing machine .. .. .	85
Kaufmann Tool & Engng. Corp.:	
Forming machine with urethane roll ..	186
Kavanagh O'Moore & Co., Ltd. .. ..	99
Kayser, Ellison & Co., Ltd.:	
Extension to Midlands warehouse ..	838
Kearney & Trecker-C. V. A., Ltd.:	
Developments at the Littlehampton factory .. .. .	1400
New A-series single-spindle .. ..	128
automatics .. .. .	
No. 8 single-spindle auto set up for deep rear-end and cross-drilling ..	751
See also .. .. .	594, 601, 694
Kearns, H. W., & Co., Ltd.:	
Horizontal milling and boring machines ..	465
Type 724P horizontal milling, boring and surfacing machine .. .. .	325
Kearney & Trecker Corp., U.S.A.:	
Mil-waukee-Mil bed-type horizontal milling machine designed for automatic-cycle operation .. .. .	694

Milwaukee-Matic series Eb tape-controlled machining centre with automatic tool changing .. .. .	694
Milwaukee-Matics installed in numerically-controlled jobbing shop ..	1188
Automatic tool changing on Milwaukee-Matic .. .. .	523
Keighley Grinders, Ltd.:	
Production control system .. ..	1416
Kellinghaus, Karl:	
Large spinning and flow turning lathe for Boeing .. .. .	71
Kellenberger, L., & Co.:	
Type 600R and 57W grinding machines ..	473
Kendall & Gent, Ltd.:	
Series 9 plano-milling machine .. ..	558
Kennametal (G. B.), Ltd. .. .. .	983, 1039
Kennametal Inc.:	
All-carbide lathe tool for grooving operations .. .. .	1039
Head for heavy boring and facing ..	983
Kent, G. B.:	
Projected experimental-numerical control system .. .. .	131
Kerry's (Gt. Britain), Ltd. .. .. .	83
Kerry's (Ultrasonics), Ltd.:	
Ultrasonic drilling machine .. ..	373
Keuffel & Esser Co.:	
Photocraft system for producing circuit diagrams under tape control ..	1144
Kewa general-purpose abrasive-belt grinder. Carborundum .. .. .	924
Keymatic washing machines. Assembling automatic timers for Hoover .. ..	116
Keyseating machines. Frömag broaching and .. .. .	485
Keyswitch Relays, Ltd.:	
P33VT range of relays .. .. .	1394
Keyways. Reclaiming damaged shafts with .. .. .	70
Khar'kov type 3A433 camshaft grinder ..	81
Kieserling, Th., & Albrecht Werkzeugmaschinenfabrik:	
WDH 0/30-50 centreless bar turning machines .. .. .	482
Kinematic sine bar. O. M. T./N. P. L. ..	519
Kingsbury, Geo., & Co. (Machine Tools) Ltd. .. .. .	534
Kingsland Engineering Co., Ltd.:	
Drop-end power bending rolls .. ..	256
Kirov type GD-21 hydraulically-operated copy shaping machine .. .. .	83
Kitchen, A., & D. Walker, Ltd.:	
Type E5 heavy-duty radial drilling machine .. .. .	1039
Klinger, Richard, Ltd.:	
Wire-reinforced PTFE sheet .. .. .	956, 1011
Knurling rotor shafts, threading and, at one operation. Lanhyrol machine set up for .. .. .	1267
Knurling tools. Oldak .. .. .	94
Kolb, Hermann, Maschinenfabrik:	
Numerically-controlled co-ordinate drilling machine .. .. .	466
Type NUCO 70 jig borer with numerical control .. .. .	888
Type KHZ generating gear grinder ..	1432
Kolene Corp.:	
Tufftriding treatment for improving die casting dies .. .. .	945
Kolomensk type 5345 universal gear hobbing machine .. .. .	82
Komet, Qualcut, precision threading tools .. .. .	1421
Kopecky, Radim:	
Single-layer diamond form grinding wheels .. .. .	764
Köpings Mechaniska Verkstads A. B.:	
Type SIONC production lathe with numerical control .. .. .	461
Type VF 12 vertical milling machine with Asea NSL 102 tape control system ..	1092
Kopp speed variators. Air-operated equipment for the remote control of ..	975
Kubach & Sambrook, Ltd. .. .. .	482
Kynmore Engineering Co., Ltd. .. ..	23

L. D. E. P. photo-electric billet detector .. .. .	360
Laboratories. Developments at the B.I.S.R.A. .. .. .	879
Laboratories of the Drop Forging Research Association. New .. ..	1375
Labormil universal machine tool .. ..	351
Ladling system for use in die casting. Dosomatic .. .. .	488
Lahr Rigid tape-controlled horizontal drilling, milling tapping and boring machine .. .. .	599
Lamb, F. Jos., Co.:	
Semi-automated equipment for assembling cylinder heads .. ..	411
Laminates. Tufnol epoxide .. .. .	18
Lamination tool made from Jessop-Saville Alloy C steel. "Toolworks" ..	727
Lamp. The Weld-Lite helmet .. .. .	645
Lancashire Dynamo & Crypto, Ltd.:	
Thermalastic electrical insulation system .. .. .	1066
Lancashire Dynamo/Electronic Products, Ltd.:	
E.S.L. type TM. 1024 teaching machine .. .. .	971
Photo-electric billet detector .. ..	360
Landis Lund, Ltd. .. .. .	948, 1390
Landis Machine Co.:	
Landmatic diehead used for hollow-milling plastics .. .. .	200
Lanhyrol thread and form rolling machine set up for producing small V-pulleys from mild steel blanks ..	1051
Lanhyrol machine set up for threading and knurling rotor shafts at one operation .. .. .	1267
Machine for producing helical gear form on lengths of bar .. .. .	1151
Landis Machine-Maiden, Ltd. .. ..	200
Landis Tool Co.:	
Type 4R Size Finder plain cylindrical grinder with numerical control .. .. .	948
Type R machine for grinding elliptical pistons .. .. .	1390
Lang, John, & Sons, Ltd.:	
Range of Electrofeed lathes extended View in shop of building of Wickman automatics .. .. .	440
Lanhyrol machine set up for threading and knurling rotor shafts at one operation .. .. .	1267
Lanhyrol thread and form rolling machine. Set-up on .. .. .	1051
Lapointe Machine Tool Co., U.S.A.:	
Universal 5-ton vertical broaching machine .. .. .	1387
Lapointe Machine Tool Co., Ltd. .. ..	1387
Lapping components for gearbox on Lapmaster machine .. .. .	1008
Lapping machine. Peter Wolters AL2, Finishing rotors and rings for hydraulic motors on a .. .. .	331
Larcher Cutters, Ltd.:	
Dispenser for end milling cutters ..	133
P.V.C. packaging for tools .. .. .	355
Laser applied to automatic scale measurement. The .. .. .	730, 780, 795
Laser interferometer. Application of a Cutler-Hammer, in connection with machine tool development .. ..	1401
Laser interferometer equipment for checking accuracy of table positioning under numerical control. Giddings & Lewis "jig borer" machine fitted with Cutler-Hammer .. .. .	997
Laser for micro-welding .. .. .	1415
Lathe. Accuratool automatic turret ..	93, 699
Lathe, "American" Economy, with G.E. type 100S punched-tape control .. ..	692
Lathe, "American" type 4025, with continuous path control .. .. .	692





	PAGE		PAGE		PAGE
M. G. Electric (Colchester), Ltd.:		Machining, Electro-chemical, of a		Martonair, Ltd.:	
Coolant equipment .. .. .	1136	turbine blade .. .. .	1198	Type S. 786C air valve .. .. .	1394
M. P. J. Gauge & Tool Co., Ltd.:		Machining, Large Anocut electro-		Type S. 21/48 high-sensitivity	
A controlled-environment inspection		chemical, unit .. .. .	1122	pneumatic valve .. .. .	1252
room .. .. .	1260	Machining large castings on G. & L.		Marvel vertical bandsawing machine.	
M. S. O. - Maschinen & Schleifmittelwerke		Fraser horizontal borers .. .. .	822	Sure-Line automatic blade controller	
AG.:		Machining, Numerically-controlled, at a		on .. .. .	1271
Type R cylindrical grinders .. .. .	479	Ferranti factory .. .. .	490	Marwin Machine Tools, Ltd.:	
Type S-200 automatic bar feed grinder	776	Machining ocular bodies on a Herbert 2D		Economics of numerically-controlled	
M. T. G. (Sales), Ltd. .. .. .	936	capstan lathe .. .. .	1085	machines .. .. .	900
M. T. I. R. A. research to facilitate		Machining operations on auxiliary		Mascot 1600 centre lathe. New	
computer design of machine tools ..	104	equipment for ships. Special units for	340	Colchester .. .. .	834
M. T. T. A. Standards Department. Work		Machining pin of single-throw crank for a		Masking tapes. New Sellotape .. .. .	611
of the .. .. .	307, 448	marine engine. Set-up on Berthiez		Mast. Uddeholm lighting .. .. .	1423
Machine for piercing window frames ..	1310	vertical boring and turning mill for ..	1149	Matchless Machines, Ltd.:	
Machine Tool Agencies, Ltd. .. .. .	83, 303	MacColl, Corrie, & Son, Ltd. .. .. .	10	Demonstration of machine tools ..	1114
Machine Shop Equipment, Ltd. .. .. .	1088	Macready's Metal Co., Ltd.:		See also .. .. .	563
Machine tool building organization in		Further expansion of the Company ..	661	Mateaki, E. J.:	
India. Government-owned .. .. .	1320	"Magic eye". Zeiss optical measuring		Electrical discharge machining of die	
Machine Tool Design and Research		machine with .. .. .	1331	casting dies .. .. .	427
Conference. 6th International:		Magnetic coolant clarifier. New Phillips	652	Matrix Mark 3 high-speed automatic	
Automatic correction of alignment		Magnetic detector unit. Tedeco .. .. .	641	circular division tester .. .. .	11
errors in machine tools .. .. .	674	Magnetic material. Salmumetal .. .. .	1424	Matrix thread grinder. Temperature-	
Interface restrictor hydrostatic		Magnetic proximity detector switch.		controlled room for .. .. .	1276
bearing .. .. .	1095	A. S. B. .. .. .	1207	Mattison Machine Works:	
The Minister of Technology on the		Magnetic swarf conveyor and filter ..	664	Small capacity horizontal spindle	
machine tool industry .. .. .	669	Manchester College of Science and		surface grinder .. .. .	589
Some thoughts on the Conference ..	1058	Technology:		Type 84 vertical-spindle rotary table	
Machine tool exhibition. Charles		An interface restrictor hydrostatic		surface grinder .. .. .	589
Churchill Manchester .. .. .	88	bearing .. .. .	1095	Maxam Power, Ltd.:	
Machine tool exhibition. Douglas ..	897	Manifolds. exhaust. High-output		Maxalog fluid logic system .. .. .	610
Machine Tool Exhibition. Ninth European		techniques for production of .. .. .	409	Maxflex multi-swaged couplings. Angus	
(See Brussels) .. .. .		Manipulator. micro-. Research		Maywick Appliances, Ltd.:	
Machine tool exhibitions. Comparative		Instruments DSP/S10 .. .. .	1207	Type FHI blown-air heater .. .. .	650
size of .. .. .	1290	Manometers. New range of micro-	489	Maximatic and Maximinor lathes at	
Machine tool industry. The Minister of		Manufacturers Equipment Co., Ltd.:		Chrysler-Cummins .. .. .	577
Technology on the .. .. .	669	Rapistan hinged steel plate conveyors	772	McFadden. Sir William, Speech by, to	
Machine Tool Industry Research		Mapal W. P. reamers with throw-away		M. T. T. A. .. .. .	274
Association:		blades .. .. .	1259	Measurement of diameters of large	
Research to facilitate computer design		Maraging steel for extrusion rams ..	345	workpieces machined on Somua roll	
of machine tools .. .. .	104	Maraging steel. Large forgings of ..	871	turning lathes, roll grinders and	
Machine tool. Laborimil universal ..	351	Marbaix, Gaston E., Ltd. .. .. .	588, 600, 608,	vertical boring mills. Merlin & Gerin	
Machine tool orders .. .. .	53, 223, 388,	691, 695, 1042, 1270		equipment for .. .. .	1317
836, 904, 1007, 1339		Marcadddy handreel. New .. .. .	268	Measurement of scales by laser inter-	
Machine Tool Sales (London), Ltd. 303, 454,		Marcar, Alexander, & Co., Ltd. ..	1087	ferometry. Machine for automatic	730, 780,
531, 653, 769, 1317		Marcati inclinable geared eccentric		795	
Machine Tool Show. Chicago 583, 615, 689,		presses .. .. .	96	Measuring equipment. Some recent	
948, 995, 1050, 1150, 1266, 1385		Marcotron variable-speed drive		developments in Russian .. .. .	872
Machine tool situation. The .. .. .	1187	controller .. .. .	894	Measuring instruments. Helios dial	
Machine tool structures. Welded-steel		Mark 100S control system. G. E. C. ..	31	indicator .. .. .	504
Machine Tool Trades Association:		Mark Century continuous-path control		Measuring, linear, machine. Russian	
Annual dinner .. .. .	1169	system. G. E. C. .. .. .	29	type EKV-2 .. .. .	873
Speech by Lord Rhodes .. .. .	787	Mark Century solid-state numerical		Measuring machine for checking	
Speech by Sir William McFadden ..	274	control system on Churchill-Redman		accuracy of parts produced on	
The work of the Standards Department	307, 448	P5 lathe .. .. .	327	numerically-controlled machines tools	522
Machine tools for operations on pressure		Mark 100S and Mark Century control		Measuring machine, Hilger-Watts cam	
vessel sections. Large .. .. .	71	systems, G. E. C. For further		profile, with automatic print-out ..	1332
"Machining, abrasive", Cylindrical ..	310	references see pages 45, 500, 594, 596,		Measuring machine with "magic eye".	
Machining, "abrasive", Surface finish		600, 601, 692, 695, 999, 1054, 1150, 1152,		Zeiss optical .. .. .	1331
obtainable with .. .. .	179	1214, 1216, 1271, 1370, 1386		Measuring machine. Micrometrical	
Machining brake drums on Gisholt		Markham, G.:		Proficorder (R) .. .. .	1042
Simplimatic chucking lathes .. .. .	930	Numerically-controlled machine tools	1064	Measuring machine. Newall No. 2443	
"Machining centre". Cincinnati type ATC		Marking equipment. Chem-Mark electro-		precision .. .. .	155
tape-controlled .. .. .	1000	chemical .. .. .	727	Measuring machine. Sheffield Cordax ..	689
"Machining centre". The Cincinnati		Marking machine. Pryor electrolytic ..	1143	Measuring machine. Sheffield 3-axis	
CIM-X .. .. .	615	Marking machine. Stamping data on		numerically-controlled .. .. .	689
Machining centre. Giddings & Lewis		diesel engine cylinder liners on a		Measuring and marking-out machine.	
Numerical Centre-H horizontal spindle	584, 952	Pryor .. .. .	579	Beta 3d .. .. .	778
Machining centre, Hillier type E40-TCC,		Marking-out and inspection equipment.		Measuring movements of slide on Scheu-	
with Bunker-Ramo 3100 continuous-		G. A. G. type GP 500 optical .. .. .	414	Schwarzkopf turret lathe. Zeiss	
path control .. .. .	1268	Marking-out machine. Beta 3d measuring		Multipriamet equipment for .. .. .	1087
"Machining centre", Milwaukee-Matic		and .. .. .	778	Measuring surface contours. Optical	
series Eb tape-controlled, with		Marking-out machine. Olivetti Inspector		system for .. .. .	1176
automatic tool changing .. .. .	695	type 25-16 3-dimensional inspection		Measuring unit. Movotellit direct-reading	
"Machining centres". Sundstrand		and .. .. .	1315	absolute length .. .. .	1115
Omnimil tape-controlled .. .. .	19	Marryat & Place, Ltd.:		Measuring wear on a flat die surface.	
Machining, Electrical discharge, of die		Installation of run of Barduct at Lesney		D. F. R. A. recording apparatus for ..	1376
casting dies .. .. .	427	Products .. .. .	1117	Meddings, W. J., (Sales) Ltd.:	
Machining. Electro-chemical .. .. .	1027	Ring main system of Barduct bushbars		Drilling and tapping machine .. .. .	410
Machining. electro-chemical, Deburring		installed at I. C. I. Fibres .. .. .	381	Multi-head drilling machines .. .. .	1040
costs reduced by .. .. .	152	Marshall, John, (Engineers) Ltd.:		Special-purpose machines .. .. .	484
Machining. electro-chemical,		Mobile scrap-chopping machine .. .. .	23	See also .. .. .	1422
Developments in .. .. .	1450	Martin type DS 60 by 1500 centre		Medway College of Technology:	
Machining. electro-chemical,		lathe. German-built .. .. .	457	A projected experimental numerical	
Mitsubishi type MC-50 equipment for	258	Martin, V. L., & Co., Ltd.:		control system .. .. .	131
		New Marcadddy handreel .. .. .	268		

	PAGE		PAGE		PAGE
Meehanite metal casting for slotting machine column .....	376	Mil, Van Norman 2G, for milling, drilling and boring operations ..	597	Milling machine for large flat surfaces. Hill Acme structural .....	605
Meggett Machine Tool & Equipment, Ltd.: Damic automatic drilling machine for producing holes from 0.010- to $\frac{1}{8}$ -in. holes .....	1222	Mil-waukee-Mil bed-type horizontal milling machine. Kearney & Trecker No. 1224 .....	694	Milling machine, Pedersen type VPU-32, with punched-tape sequence control ..	468
Meleka, Dr. A.H.: Electron beam welding as a production process .....	796, 852	Miller, John: Dip brazing ensures high-quality waveguides .....	1325	Milling machine. Polish-built FGC 25A electronic copy .....	363
Melting pots. Funditor .....	1252	Milling attachment. copy. Mimik 3-axis .....	94	Milling machine, Profiling a cam plate on a Gorton tape-controlled .....	524
Menziken Machine Tool Works, Ltd.: Vertical lathes .....	193	Milling and boring machine, New Cincinnati table-type horizontal, with integral indexing table .....	615	Milling machine. Reiden type HF 300 horizontal .....	651
Mercer Pneumatic Tools, Ltd.: Capstan lathe bar feed extension unit .....	42	Milling and boring machine, Large Innocenti-CWB, installed in English Electric Stafford works .....	782	Milling machine, Reinhard Bohle type FWR 85/5555/NC 8-spindle turret head horizontal, with Brown Boveri point-to-point numerical control system .....	889
Merlin & Gerin equipment for direct measurement of large workpieces machined on Somua roll-turning lathes, roll grinders and vertical boring mills ..	1317	Milling and boring machine. Kearns series 45 horizontal .....	465	Milling machine. "Rigid" type KAB 50 N numerically-controlled bed-type vertical .....	1431
Messer Griesheim, Ltd.: Automatic flame cutting machines for continuous casting plant .....	1275	Milling and boring machines, Installation of two Wotan, in Belliss & Morcom works .....	642	Milling machine, Rockford Hy-Draulic Synchro-Trace, for production of deep die and mould cavities .....	693
Meta-Klean anti-corrosion product ..	68	Milling, boring and surfacing machine. Kearns type 724P horizontal .....	325	Milling machine. Russian-built ENIMS type CA 12P vertical .....	78
Metachemical Processes, Ltd.: Series of Dalic plating demonstrations ..	955	Milling and centring machine. Russian semi-automatic .....	76	Milling machine. Sachman-Inger Reggio Emilia type FAS 1500 vertical .....	899
Metal powder components. Advantages obtained with some .....	1397	Milling, Continuous, on a Bridgeport machine .....	330	Milling machine. Setting templates on a Herbert 4TV vertical, reduce changeover time .....	368
Metallising plant. VIA-VAC EH72 vacuum .....	697	Milling, Copy, and die sinking machine. Sverdlova type 6441b .....	305	Milling machine, Werner BF 3V bed-type, fitted with Brown Boveri programme control or Plessey tape control equipment .....	1090
Metalwerk Plansee G.m.b.H. ..	315	Milling, copy, machine. Dowling type 242 die sinking and .....	261	Milling machine, Fritz Werner type FV 3, with Zeiss Multiprismat system .....	891
Metalonics Corps.: Maraging steel for extrusion rams ..	345	Milling, copy-, machine. Swiss-built Rigid type KAB 50 .....	702	Milling machine. Wickman profile ..	1282
Metco, Ltd.: Low-cost plasma-flame spraying unit ..	804	Milling cutter. Prolite Little Chipper end ..	770	Milling machines. Assembly and testing arrangements for Cincinnati Powermatic .....	16
Meter casting. Die cast domestic gas ..	206	Milling cutters. Dispenser for Larcher end .....	133	Milling machines. Cincinnati Cinedo ..	467
Meter. New Talysurf peak-height ..	770	Milling cutters in metric sizes. Clarkson throw-away .....	680	Milling machines. Rambaudi universal swivelling head for .....	534
Metoh eccentric toolholder for machining slots .....	1140	Milling and die sinking machine. Giddings & Lewis DiMil 3-axis contour ..	584	Milling operations. 3-axis, Ex-Cell-O type 922 Numera-Trol machine for 2-axis contour boring, turning and grinding .....	591
Metric. The change to .....	283	Milling, drilling and boring operations. Van Norman 2G Mil for .....	597	Milling operations, continuous-path and hydraulic copy, on Hayes Tapemaster and Tracemaster machines. Components produced by ..	1219
Metric screw threads. BSI statement of policy on .....	1226	Milling, drilling, boring and tapping machine. Burgmaster type 20T-SH numerically-controlled ..	951	Milling and routing, Ekstrom Carlson No. 444 Rout-O-Mill for high-speed, with Bunker-Ramo 2-axis continuous-path control .....	696
Metro-Cutanit, Ltd.: New factory .....	314	Milling the faces of header tanks. Set-up for .....	893	Mills & Rockleys (Electronics), Ltd.: Push-button switch for printed circuits .....	1306
Metrology equipment. Optimec ..	140	Milling and grinding machine. Christen type KFS chamfer .....	538	Milmar Plastics, Inc.: Hollow-milling plastics with a Landis diehead .....	200
Metropolis Machine Tools, Ltd. ..	887, 1324	Milling head for use on planing machines. Hyvarmill hydraulic .....	974	Millmatic machine. Set-up on H. P. E. ..	638
Micro-manipulator. Research Instruments DSP/S10 .....	1207	Milling, Hollow-, plastics with a Landis diehead .....	200	Milwaukee-Matic series Eb tape-controlled machining centre with automatic tool changing. Kearney & Trecker .....	695
Microfilm enlargers. Ozald to market Caps Jeffrey .....	332	Milling a large bore. Bridgeport machine adapted for .....	378	Milwaukee-Matics, Installation of Kearney & Trecker, in numerically-controlled jobbing shop ..	1188
Microfinish machines. Typical parts with surfaces which have been highly finished on Thielenhau .....	672	Milling location spots on crankshafts. Alfing machine for .....	812	Mimik (U.K.), Ltd.: 3-axis copy milling attachment ..	94
Microfilm process. Eutectic .....	426	Milling machine arranged for fully-automatic profiling. Famco type 112-21M duplex vertical ..	1390	Minertia motors .....	412
Micromatic Corporation: Hydrohoner machine for micro-honing brake drums .....	415	Milling machine arranged for programme control. Polish-built vertical ..	365	Mini-cushion accumulator. Fawcett-Preston .....	185
Prototype electrolytic honing machine ..	591	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949	Mindrive variable-speed drive unit. Heynau .....	1422
Micrometers and height gauges. Producing Shardlow .....	235	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949	Minister of Technology on the machine tool industry .....	669
Micrometers and their production. Bowers internal .....	421	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949	"Minor" horizontal boring machine. Collet & Engelhard .....	464
Micrometrical Manufacturing Co.: Guide to surface finish .....	608	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949	Minting press. H. M. E. Coinmaster No. 2 .....	1093
Profilcorder (R) measuring machine ..	1042	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949	Mitsubishi Electric Corps.: Type MC-50 equipment for electro-chemical machining .....	258
Microscope. Russian type UEM-23 universal measuring .....	872	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949	Mixing of oil and water. Use of Soniprobe for ultrasonic .....	372
Microscope. Zeiss Ultraphot, Examining marking dies with a .....	1399	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949	Mock-up, Wooden, assists hob setting ..	234
Microscopes, Machining ocular bodies for O. M. T., on a Herbert 2D capstan lathe .....	1085	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949		
Microstatic automatic-cycle cylindrical grinder with automatic loading equipment for diesel engine pistons. Brown & Sharp type 1018 ..	585, 998	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949		
Microtec S.p.A.: Type P 1000-A profile projector ..	1217, 1458	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949		
Middlesex Automation, Ltd.: NC100 Speedrill tape-controlled drilling machine .....	936	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949		
Midland Air Conditioning, Ltd. ....	1276	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949		
Midland Heating & Ventilation Co., Ltd.: Midac Dust Control Divn.: Reverse air fabric filter ..	1363	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949		
Mikron Machine Works, Ltd.: Type 79 gear hobbing machine ..	419	Milling machine, Cincinnati 30-in. bridge-type profile, with 3-axis numerical control .....	949		

	PAGE
Moldmaster machine installation at Ford Motor Co. arranged to accommodate four different patterns at one time ..	1287
Molloy, J., C. Eng., A.M.I. Mech. E., A.M.I. Prod. E.: Electrochemical machining .. ..	1027
Electrochemical machining of a turbine blade .. ..	1198
Monarch filing cabinet. Admel .. ..	301
Monarch Machine Tool Co.: Type 220 N/CC tape-controlled chucking lathe .. ..	1389
Edlund Division: Edlund-Matic type 2NL drilling, milling and boring machine .. ..	1150
Type NPB machine for drilling printed circuit boards .. ..	1271
Mondiale S.A.: Didacton Automat and Didacton tic-tac training equipment .. ..	657
MonoCast nylon, components in, produced by Polypenco Ltd. .. ..	725
Monometer Manufacturing Co., Ltd.: Furnace for use in production of SG irons .. ..	1275
Moore Bros., Ltd.: Automatic grinder for sheet edges ..	98
Moore Special Tool Co., Inc.: British-built No. 2 jig grinder ..	1168
No. 3 jig grinder .. ..	1166
"Spin" table unit .. ..	1167
Type 1440 precision indexing table ..	1167
Morando, Fratelli, & Co.: Type CM 12 12-spindle vertical chucking machine .. ..	532
Type CF vertical turning and boring mills .. ..	450
Type KL 14 vertical boring mill with programme control .. ..	651
Morganite Thermal Designs, Ltd.: Morgan Bale-O-Matic furnace fired by fuel oil .. ..	33
Morris, Herbert, Ltd.: Litalift balanced spur gear pulley blocks .. ..	663
Mortimer Machine Tool Co., Ltd. 461, 465, 654, 1092, 1314	80
Moscow type 3451B spline grinder	
Motch & Merryweather Machinery Co.: Type 21-VNC tape-controlled vertical-spindle chucking automatic .. ..	599
Motor car air conditioning installations. Production of the Frigidaire axial type compressor for .. ..	1076, 1300
Motor car body parts. USI Changanatic press line in the Ford factory at Cologne for production of .. ..	1003
Motor car brake drums and wheel hubs. Gilman machine for assembling .. ..	982
Motor car brakes. Semi-automatic machine for assembling .. ..	1311
Motor car cylinder block castings. Large Diskus grinding machine installation for .. ..	992
Motor car cylinder blocks. Buhr in-line transfer machines for operations on Ford .. ..	1284
Motor car cylinder heads. Semi-automated equipment for assembling .. ..	411
Motor car exhaust manifolds. High-output techniques for production of .. ..	409
Motor car gudgeon pins. Automated cold-extrusion line for producing five sizes of .. ..	38
Motor car. Light alloy castings in the production of the Skoda 1000MB .. ..	1439
Motor car pistons. ATAG equipment for grading .. ..	1172
Motor car rear axle cross-members. An in-line transfer machine for assembling .. ..	292
Motor car steering arms. Renault automatic assembly machine for .. ..	316
Motor car transmission casing. Archdale transfer machines for operations on BMC 1800 .. ..	250

	PAGE
Motor cars. Die cast components for light .. ..	205
Motor control unit. Sanders electric ..	935
Motor. New Vacsyn slow-speed synchronous .. ..	988
Motor. Vimarc vibrator .. ..	894
Motor vehicle brake drums. Machining, on Gisholt Simplimatic chucking lathes ..	930
Motors. Comtex f.h.p. electric .. ..	320
Motors. New "English Electric" electric commutator .. ..	1109
Motors. Newman variable-speed commutator .. ..	1281
Motors and generators. New ranges of Compton Parkinson a.c. .. ..	178
Motors. Minertia .. ..	412
Motors. Pye Smoothspeed Regulator for a.c. series .. ..	1108
Motorator vapour phase rust inhibitor ..	254
Mould for glass container. Borhringer Hydrokop-Universal out-of-round copying attachment set up for producing a .. ..	1372
Mould, 10-impression, for phenolic resin handle .. ..	215
Moulding materials. New polystyrene ..	970
Moulding process. ceramic, Typical castings produced by the Unicast ..	725
Mounting bracket. Vero circuit board ..	1220
Movomatic S.A.: Movotelt direct-reading absolute length measuring unit .. ..	1115
Multicop copy turning lathe. Weissner ..	456
Multi-Finitron diameter control unit on Fortuna-Werke grinder .. ..	774
Multi-operation set-ups for batch work. Possibilities of .. ..	1019
Multicore Solders, Ltd.: Fine-gauge solder .. ..	1262
Solderability test machine .. ..	561
Multiprismat equipment on FIMAP Olympia jig borer. Zeiss .. ..	1316
Multiprismat system for measuring movement of slide on Scheu-Schwartzkopf turret lathe. Zeiss ..	1087
Multiprismat system on Fritz Werner type FV 3 milling machine. Zeiss ..	891
Multiswitch. Contraves type G .. ..	23
Multitour high-speed drilling head ..	660

## N

	PAGE
National Acme Co.: Acme-Gridley 12-in. single-spindle chucking automatic with automatic dial control .. ..	948
Acme-Gridley 2½-in. HSC-6 chucking automatic set up for machining cold-extruded blanks for sparking plug bodies .. ..	1050
National Broach & Machine Co.: Red Ring Super-Speed gear shaver ..	996
Red Ring type VBA 25-ton pot broaching machine .. ..	1051
National Engineering Laboratory: Annual report .. ..	180
Steels for cold extrusion punches ..	22
National Physical Laboratory: Machine for automatic measurement of scales by laser interferometry ..	730, 780, 795
Teaching machine .. ..	971
National Plan. Investment requirements for The .. ..	663
Neill, James, & Co. (Sheffield), Ltd.: Eclipse metal cutting saw bands ..	619
Exhibits at Brussels Machine Tool Exhibition .. ..	547
New Britain Machine Co.: No. 112 chucking automatic .. ..	1153
Type 66 precision contour boring and turning machine .. ..	1266
Lucas Machine Divn.: Versa-Tronic numerically-controlled vertical boring and milling machine ..	15

	PAGE
News of the Industry: Cheshire .. ..	158, 215
Derbyshire .. ..	1117
Kent .. ..	214
Lancashire .. ..	783, 784, 954, 1230, 1285
Lincolnshire .. ..	893
London .. ..	47, 503
Midlands, The .. ..	1338
South, The .. ..	47, 214, 331, 362, 503, 672, 837, 896, 1173, 1454
Yorkshire .. ..	48, 101, 272, 439, 502, 561, 618, 671, 728, 836, 1008, 1062, 1286, 1337, 1399
Newall Group Sales, Ltd.: No. 2443 precision measuring machine ..	155
Newman Industries, Ltd.: Variable-speed commutator motors ..	1281
Nichols, J.R.: A boring fixture for pipe bosses ..	1113
Nickel/chromium plating process. Electrolyte equipment for treatment of wheel rims by the Tri-Ni .. ..	502
Nickel Oxide Sinter 90 - a new primary nickel .. ..	1449
Nickols plugboard programme control. Accuratool lathe with .. ..	93, 699
Nig Manufacturing Co., Ltd.: HALCODRI diazo printing machine ..	553
Nimonic 90 die inserts for extruding copper .. ..	613
Nippe Industrial Co., Ltd.: Type DSG V-18D double-disc surface grinder .. ..	96, 508
Nordberg Manfg. Co.: Cycle programmer .. ..	1271
Elmes hydraulic press set up for production of copper tubular T-pieces ..	1054
Norgren, C.A., Ltd.: Lubrication and compressed air equipment at Brussels Exhibition ..	658
Precision air-pressure regulator .. ..	772
North American Aviation, Inc.: Diffusion bonding of aluminium ..	355
Norton Abrasives, Ltd. .. ..	33, 92, 765
Norton Co.: Cylindrical "abrasive machining" ..	310
Large diamond wheel .. ..	154
Licence to manufacture Czech single-layer diamond form grinding wheels ..	764
Norton International, Inc.: Behr-Manning Divn: Bear-Tex abrasive polishing wheel ..	33
Bear-Tex abrasive flap wheel .. ..	92
Norton, Sir James Farmer, & Co., Ltd.: Large bar peeling machine .. ..	299
Notching with Ferro-Tic punches .. ..	315
Notching press. Grimar type EA 8-200 automatic .. ..	1093
Novaresse, Fratelli: Novamatic internal grinding machines for bearing rings .. ..	475
Nuckey Scott & Co., Ltd.: Warrior Quick Jet tap for blind holes ..	771
Numerat-Trol machine for 2-axis contour boring, turning and grinding and 3-axis milling operations. Ex-Cell-O type 922 .. ..	591
Numerat-Trol precision horizontal boring machine. Close-up view of spindle head on Ex-Cell-O type 992 .. ..	1156
Numerat-Trol precision boring machine. Ex-Cell-O type 992 4-axis .. ..	592
Numeri-Set equipment for accurately pre-setting tools to be used on numerically-controlled machines. Lodge & Shipley .. ..	602
Numeric Machining Inc.: A numerically-controlled jobbing shop ..	1188
Numerical control. Bullard 5-in. Dynamill horizontal boring, milling and drilling machine with 2-axis Mark Century .. ..	590
Numerical control. Bunker-Ramo, Warner & Swasey turret lathe fitted with .. ..	152

	PAGE		PAGE		PAGE
Numerical control. Burgmaster type		Numerically-controlled drafting machines.		Olsen, Tinius, Testing Machine Co.:	
20T-SH milling, drilling, boring and		The possibilities of	451	Semi-automatic crankshaft	
tapping machine with	951	Numerically-controlled jig borer. Kolb		balancing machines	199
Numerical control for centre lathes	571	type NUCO 70	888	Olympia numerically-controlled jig	
Numerical control. Cincinnati 30-in.		Numerically-controlled drilling and		borer. FIMAP	1316, 1458
bridge-type profile milling machine		tapping machine. New Aquath 2HD	1227	Omnimil contour milling machine.	
with 3-axis	949	Numerically-controlled facing and turning		Sundstrand	524
Numerical control for die sinking	395	lathe. Numérol	1213	Omnimil tape-controlled "machining	
Numerical control. Drillmation Bore-Pam		Numerically-controlled jig borer.		centre". Sundstrand	19
machine arranged for automatic		FIMAP Olympia with ELBO type		Opro-Turn lathe with Cincinnati	
positioning under	997	P.O.E. 25 equipment	1316, 1458	Telematic 111 control system.	
Numerical control. Edlund-Matic		Numerically-controlled jobbing shop	1188	Springfield	953
drilling, boring and milling machine		Numerically-controlled lathe.		Optical angular scales. Producing	
with	1150	Churchill-Redman P5	45, 327	precision	865
Numerical control equipment		Numerically-controlled P5 lathe.		Optical Measuring Tools, Ltd.:	
developments. Grundig	537	Programming the Churchill-Redman	826	Building precision into OMT optical	
Numerical control equipment, Ferranti		Numerically-controlled lathe with Heller		rotary tables	284, 516
Scope 200 series, on Vero Autodril	1088	control equipment. Boehringer type		Diffraction gratings for Newall	
Numerical control equipment, G.E. Mark		V800	1371	precision measuring machine	155
Century 100S continuous-path, on		Numerically-controlled machine. Giddings		Machining ocular bodies on a	
Heidenreich & Harbeck lathe	1370	& Lewis type 70 NumeriCenter	704	Herbert 2D capstan lathe	1085
Numerical control equipment for machine		Numerically-controlled machine tool		Producing precision optical angular	
tools. Olivetti continuous-path	766	programming	1356	scales	865
Numerical control equipment, Phillips		Numerically-controlled machine tools-		Spark machining grooves in pneumatic	
on Scharmann horizontal boring and		a definition	1064, 1233	gauging members	1146
milling machine	1218	Numerically-controlled Machine Tools,		O.M.T./N.P.L. kinematic sine bar	519
Numerical control equipment. Sperry, on		Ltd.	1315	Optical-Mechanical (Instruments), Ltd.:	
Société Genevoise 5E CN jig borer	890	Numerically-controlled machines.		Optimec metrology equipment	140
Numerical control. Fortuna-Werke type		Economics of	739, 900	Optical rotary tables. Building	
AFD 350/1000 AN cylindrical grinding		Numerically-controlled machines. Lodge		precision into OMT	284
machine with	775	& Shipley Numeri-Set equipment for		Optical set-ups for checking rotary	
Numerical control. G.E. Mark Century		accurately pre-setting tools to be used		tables	516
103-P, Burgmaster type 3 BHT-SH-TC		on	602	Optical square. 3-dimensional	294
travelling-column drilling, boring,		Numerically-controlled machining at a		Optical system for measuring surface	
tapping and milling machine with	1054	Ferranti factory	490	contours	1176
Numerical control. Giddings & Lewis "jig		Numerically-controlled plain cylindrical		Optimec metrology equipment	140
borer" machine with laser interfero-		grinder. Landis type 4R Size Finder	948	Order quantity calculator	1045
meter equipment for checking accuracy		Numerically-controlled 3-axis measuring		Orders. Machine tool	53, 223, 388, 836,
of table positioning under	997	machine. Sheffield	689	904, 1007, 1339	
Numerical control. Kipings type SIONC		Numerically-controlled turret lathe.		Ordnokidize type MR 76 semi-automatic	
production lathe with	461	Jones & Lamson Specimatic	1385	milling and centring machine	76
Numerical control. New Britain No. 112		Numerically-controlled vertical boring		Oscillating belt. Barnes T-18	
single-spindle automatic with	1153	and milling machine. Lucas Versa-		Tri-Matic grinder with	601
Numerical control. Planning for	521	Tronic	15	Osmond, A. & S., Ltd.:	
Numerical control. Renwell, Bullard		NumeriCenter-H horizontal spindle		Type 5M11 abrasive-wheel cutting	
46-in. Dynatrol vertical turning and		machine. Giddings & Lewis	583	machine	260
boring mill with	590	NumeriCenter type 70 numerically-		Osterwalder AG.	562
Numerical control system. Brown Boveri		controlled machine. Giddings & Lewis	704	Ourada, F.:	
point-to-point, on Reinhard Bohle		Numérol numerically-controlled facing		Light alloy castings in the production	
8-spindle turret head horizontal		and turning lathe	1213	of the Skoda 1000MB car	1439
milling machine	889	Nut with built-in hydraulic jacks.		Out-of-round hydraulic copying	
Numerical control system. Grundig, on		Pilgrim	665	attachment. Boehringer Hydrokop-	
Scheu Schwartzkopf turret lathe	1087	Nut for sluice valve. Whitmetal	932	Universal	1372
Numerical control system. Saab, on		Nut unit. Redman Pierce	763	Outlets, socket-, for laboratories.	
Torshälla Holemaster co-ordinate		Nylon coiled hose	1396	Movable	381
drilling and boring machine	887	Nylon, Components in MonoCast,		Ovens. A.E.W. electric	981
Numerical control system, Tapac IV, on		produced by Polypenco Ltd.	725	Oven for pre-heating plastics	
DeVlieg K Jigmil	588	Nylon, Components produced from,		sheets. A.E.W.	1273
Numerical control system, A projected		supplied by B.X. Plastics, Ltd.	149	Overload protection unit for servo-	
experimental	131			mechanisms	91
Numerical control systems. French				Overseas trade in machinery	3
developments in	134			Ozolid Co., Ltd.	332
Numerical control. Warner-Swasey					
Asquith 3AC automatic with	452				
Numerical point-to-point control					
equipment. Cabinet containing					
Ferranti Scope	1313				
Numerical position control. Ex-Cell-O					
type 992 Numeri-Trol precision					
boring machine with	592				
Numerical positioning system on Fritz					
Werner type FV 3 vertical milling					
machine. Zeiss Multiprimat	891				
Numerical read-out units on Wickman					
profile milling machine. "English					
Numbering Machines"	1283				
Numerical sequence control. B.S.A.					
type 95N chucking automatic with	453				
Numerically-controlled bed-type vertical					
milling machine. "Rigid" type KAB					
80N	1431				
Numerically-controlled control lathe.					
Large Skoda type SIU 100	1277				
Numerically-controlled co-ordinate					
drilling machine. Kolb	466				

O

P



	PAGE		PAGE		PAGE
Painting and stoving unit. Auteq type		Pin of single-throw crank for a marine		Plessey Co., Ltd.:	
AD 20 dip .. .. .	498	engine. Berthies vertical boring		Sintered Metals Divn.:	
Panels. Assembly "essels" for		and turning mill set up for		Advantages obtained with some metal	
electrical panels .. .. .	369	machining .. .. .	1149	powder components .. .. .	1397
Panels. Printed circuit test		Pinder, W., & Son, Ltd.:		Plessey-UK, Ltd.:	
Panex, Ltd.:		Verastool range of tool and component		Bendix Dynapath 20 continuous-path	
Electronic safety circuit on gamma		storage equipment .. .. .	1222	control system .. .. .	25
radiation equipment for non-		Pinion blanks, turning two bevel,		Mark III tape control system ..	545
destructive testing .. .. .	1230	Bullard Templa-Turn 2-spindle		Mark III tape control system on	
Paper-making machines, Machining		vertical chucking machine set up		Grafenstaden ram-type milling	
large castings for, on G & L-Fraser		for .. .. .	1269	machine .. .. .	1318
horizontal borers .. .. .	822	Pinion inspection. "Illinois Tool Works"		Mark III tape control equipment on	
Paris Fair. Russian machine tools		automatic machine for helical ..	1000	Werner BF 3 V milling machine ..	1091
at the .. .. .	303	Pinions. Landis machine for economical		Plugs. Blacker Hex- .. .. .	988
Paris Machine Tool Exhibition ..	316	production of small .. .. .	1151	Plugboard-type programme control on	
Parker-Hannifin Corp.:		Pipe bosses. A boring fixture for ..	1113	Accuratool turret lathe. Nickols ..	93, 699
Hannifin Press Co. Divn.:		Pipe threading machine. Ridgid ..	821	Pneumatic bench presses designed for	
Hy-power cold riveting equipment ..	720	Pipes. Handling large quantities		safety in operation. Rigg .. ..	1142
Parsons, C.A., & Co. Ltd.:		of cast .. .. .	69	Pneumatic chipping hammer. Thor ..	548
Use of Evo-Stik adhesive for		Pistons. ATAG equipment for grading		Pneumatic control valves. J.J.J.	
bonding stator laminations .. ..	817	motor car .. .. .	1172	Churchill range of .. .. .	1120
Payne Products International, Ltd.:		Pistons. diesel engine, Brown & Sharpe		Pneumatic-mechanical forging	
Lapping components for new		type 1018 Microstatic automatic		machines .. .. .	226
gearbox on Lapmaster machine ..	1008	cycle cylindrical grinder with		Pneumatic valve. Martonair type	
Peabody, Henry W., (Industrial), Ltd.		automatic loading equipment for		S.21/48 high-sensitivity .. ..	1252
Equipment for the Tuffride process		handling .. .. .	998	Pneumatically-operated counters.	
Pedersen, Vilh., Ltd.:		Pistons. elliptical, Landis type R		Hardings .. .. .	664
Type VPU-32 milling machine with		machine for grinding .. .. .	1390	Pneumol air-hydraulic fluid pressure	
punched-tape sequence control ..	468	Pitan stainless steel surface coating		generator .. .. .	1224
Peeling machine. Large bar .. ..	299	system .. .. .	1084	Polar Hydraulics, Ltd.:	
Peer-Matic programme control		Plan. The National, investment		Instrument supporting stand .. ..	73
system on Peerless bandsawing		requirements for the .. .. .	683	Polish arc de-scaling arrangement ..	520
machine .. .. .	1268	Plan-E-Trol continuous-path control		Polish machine tools. Recent	
Peerless Machine Co.:		system. AEI .. .. .	24	developments in .. .. .	361
Bandsawing machine with Peer-Matic		* Planning machine. Driving arrangements		Polishing wheel. Norton Bear-Tex	
programme control system .. ..	1268	for the table of a .. .. .	34	abrasive .. .. .	33
Pellet welding equipment. Balfour		Planning machine with number of		Pollard, Fredk., & Co., Ltd.:	
& Darwins .. .. .	1329	improvements to be added to firm's		An interesting rotary transfer	
Pels, Henry, & Co., Ltd. .. ..	265, 473	range. Boehringer .. .. .	1369	machine .. .. .	1364
Perfection Engineering, Ltd.:		Planning machines. Hyvarmill hydraulic		Polydyne drive. Ferracute press	
Type PE6 vertical honing machine ..	471	milling head for use on .. ..	974	with G.E. .. .. .	1273
Perkins Group:		Planning board. 12,000-item		Polymathic Engineering Co., Ltd.:	
Dressing crankshaft grinding wheels		Strafoplan .. .. .	1168	Coolite 1½-ton pallet truck .. ..	145
with Trifius diamond tools .. ..	346	Planning and control. production,		Coolite type 4100 lift truck .. ..	321
Installation of Le Pla tool control		VISA teaching aid for .. .. .	1119	Coolite and Cub trucks in use at	
boards and associated equipment in		Planning for numerical control ..	521	Rolls-Royce .. .. .	1063
No. 2 Factory .. .. .	242	Plano-milling machine. Gray		See also .. .. .	72
New crankshaft line .. .. .	812	Handymill open-side .. .. .	595	Polypenco, Ltd.:	
Permal, Ltd.:		Plano-milling machines. Henschel type		Components produced in MonoCast	
Hytex drop hammer boards .. ..	249	F 081 d twin-head open-sided, with		nylon .. .. .	725
Perman Quicklock toolholders .. ..	887	Contraves tape control equipment ..	1088	Polyethylene moulding materials. New	
Petbow, Ltd.:		Plano-milling machine. Kendall & Gent		Poreba type TR 70C face-turning	
New diesel generating sets .. ..	1336	series 9 .. .. .	558	lathe. Polish-built .. .. .	361
Petermann automatics. Some examples		Plano-milling machines. Futurmill		Posalux Copy for drilling machine	
of set-ups on .. .. .	146	to build .. .. .	614	for printed circuits .. .. .	256
Phenolic resin handle. 10-impression		Plasik flooring for light engineering		Position-indicating equipment, Rheem	
mould for .. .. .	215	shops .. .. .	1438	Vu-point direct-reading, on Micro-	
Philips magnetic coolant clarifier.		Plasma-flame spraying unit. Metco		tecnic profile projector .. ..	1217
New .. .. .	652	low-cost .. .. .	804	Positioning and cycle control equipment,	
Philips numerical control equipment		Plastic Coatings, Ltd.:		Phillips point-to-point, on	
on Scharmann horizontal boring and		Vypatch plastics putty .. .. .	1143	Cophilmatic drilling, boring tapping	
milling machine .. .. .	1218	Plastics, Electro-plated, components		and milling machine .. .. .	1314
Philips point-to-point positioning and		Plastics extruding machine for		Positioning equipment. Ferranti Scope	
cycle-control equipment on		cartridge cases .. .. .	1225	tape-controlled co-ordinate .. ..	481
Cophilmatic drilling, boring, tapping		Plastics, Hollow-milling, with a		Positioning equipment. Research	
and milling machine .. .. .	1314	Landis diehead .. .. .	200	Instruments DSP/S10 micro-	
Photo-electric billet detector. L.D.E.P.		Plastics material. Iothane resilient ..	922	manipulator .. .. .	1207
Photo-electric counters. Vistolux ..	425	Plastics sheets. A.E.W. oven for		Positioning of machine slides. Inchworm	
Photo-electric tracing system. DoALL		pre-heating .. .. .	1273	unit for accurate .. .. .	1053
bandsawing machine arranged for		Plastilock adhesive for bonding brake		Positioning system. An automatic	
automatic control from a line		and clutch linings .. .. .	1396	805, 1097	
drawing by .. .. .	603	Plating barrel. New fully-immersed ..	300	Positioning system, Zeiss Multiprismat,	
Photocircuits Corporation:		Plating, barrel-zinc, ionic double		on Fritz Werner type FV 3 vertical	
Drilling machine for printed circuit		their capacity for .. .. .	247	milling machine .. .. .	891
boards .. .. .	326	Plating demonstrations. Series of Dalc		Powder, metal, components. Advantages	
Photodraft system for production of		Udylite, for treatment of wheel		obtained with some .. .. .	1397
master circuit diagrams under tape		rims by the Tri-Ni process at		Powder pressing machine. Dorst	
control .. .. .	1144	Raleigh works .. .. .	502	300-ton automatic dry .. .. .	1138
Piercent. Tolwood .. .. .	763	Plating machine. A versatile electro-		Power-Micro equipment for accurate	
Piercing window frames. Machine for		plating processes. New gold .. ..	10	adjustment of roll feed stroke length	
Pilgrim nut with built-in hydraulic		Plating, Silver, threads to prevent		while press is in operation. Bliss ..	1059
jacks .. .. .	665	seizure .. .. .	835	Powermatic machines. Assembly and	
Pilote type S hydraulic copying lathe ..	134	Plating solutions. New Croickshanks ..	1324	testing arrangements for Cincinnati	
		Plating, Tin-nickel, protects disc		reduces time of milling operation ..	893
		brake pistons .. .. .	298		

	PAGE		PAGE		PAGE
Powmatic, Ltd.:		Presses. Nordberg hydraulic, Special		Programme control system, Peer-	
Commercial Aire type CA-200		technique for producing tubular		Matic, on Peerless bandsawing	
air heater .....	1424	T-pieces of copper on .....	1054	machine .....	1268
Poznan Fair. Giddings & Lewis-Fraser		Presses. SMG large-capacity fine-		Programme-controlled barrel zinc	
at the .....	213	blanking .....	562	plating plant .....	247
Pre-setting arrangements for H.		Presses. Sutton extrusion .....	382	Programme-controlled batch transfer	
Ernaul-Somua lathe. Tool .....	137	Presses. U.S.I., Selling arrangements		system for metal finishing, Winna ..	703
Pre-setting. The importance of tool ..	627	and production facilities for ..	729	Programme-controlled machine tools	
Pre-setting tools to be used on		Presses, Verson, Arrangements for		employed at Hindustan Machine	
numerically-controlled machines.		building and selling, in the U.K. ..	722	Tools. Ltd. ....	1320
Lodge & Shipley Numeri-Set		Pressings, trimming machine for,		Programme-controlled milling machine.	
equipment for accurately .....	602	Widani type BSO .....	653, 1069	Crouzet type FA 100 .....	538
Pre-setting unit for "American Tool		Pressure die casting machines.		Programmer. Nordberg cycle .....	1271
Works" numerically-controlled		V.W.F. ....	210	Programming the Churchill-Redman	
lathes .....	1053	Pressure die casting in the S.I.M.I.		numerically-controlled P5 lathe ..	826
Pre-setting unit, Optical tool, to		foundry, Milan .....	201	Programming for a Hardinge lathe	
facilitate rapid setting up of		Pressure vessel fabricated from		equipped with Elliott sequence	
Boehringer V800 numerically-		Firth Vickers stainless steel plate		control .....	917
controlled lathe .....	1371	Pressure vessel sections. Large		Programming. Numerically-controlled	
Precision, Building, into OMT rotary		machine tools for .....	71	machine tool .....	1356
tables .....	284, 516	Presswork Hydraulics, Ltd. ....	720	Progress (Universal), Ltd.:	
Precision Gear Machines & Tools, Ltd.:		Printed circuit boards. "Drill Service"		Floor cleaner .....	306
British-built Lees-Bradner type		type 115 drilling machine for ..	418	Progressive press tools with tungsten	
7HD gear hobbing machine .....	542	Printed circuit boards. Drilling		carbide inserts .....	818
Precision Grinding, Ltd.:		machine for .....	326	Progressive Tool & Gage Co.:	
Alexander type 2 LP pantograph		Printed circuit boards. Edlund type NPB		Use of Ferro-Tic C machinable	
engraving machine .....	483	machine for drilling .....	1272	carbide for carton dies .....	580
Precision Screw & Manfg. Co., Ltd.:		Printed circuit test panels .....	1194	Projector with 2-axis Vu-Point	
New factory .....	1342	Printed circuits. Flexible .....	637	position display equipment. Ex-Cell-O	
Precious Metal Depositors, Ltd.:		Printed circuits. Posalux Copy for		type 30-826 contour .....	593
New gold plating processes .....	10	drilling machine for .....	257	Projector. Microtecnica type P 1000-A	
Silver plating threads to prevent		Printed circuits. Push-button switch		profile .....	1217, 1458
seizure .....	835	for .....	1306	Protecting machinery with Ambersil	
Press, brass stamping, with sub-press.		Printing machine. Halden HALCOdri		MSA silicone grease .....	263
Wilkins & Mitchell type E30HBI-10		diao .....	553	Protection of disc brake pistons.	
* Press. Control system for a power ..	34	Printing machinery. Experience with		Tin-nickel plating used for .....	298
Press. Cressex 15-ton ungeared		a tape-controlled drilling machine		Protection unit, Overload, for	
inclined power .....	350	by a firm making .....	1307	servo-mechanisms .....	91
Press Equipment, Ltd.:		Printing table. Loftline vacuum ..	1173	Protolite, Ltd.:	
Combined decoller and straightening		Process heating equipment. Exhibition		Prolite Little Chipper end-milling	
machines .....	1142	of Barlow-Whitney .....	1060	cutter .....	770
Press. Ferracute 30-ton .....	1273	Production control system in a machine		Pryor, Edward, & Son Ltd.:	
Press. Fromag type DP 15/2000		tool factory .....	1416	Electrolytic marking machine ..	1143
straightening .....	654	Production control, work-handling		Examination of marking dies with	
Press. Gruau type EA 8-600 auto-		and communications systems for		a Zeiss Ultraphot microscope ..	1399
matic notching .....	1093	batch work .....	684	Marking machine for stamping	
Press. H.M.E. Coinmaster No. 2		Production Engineering Research		data on diesel engine cylinder liners	
mining .....	1093	Association:		Pugley, Joseph, & Sons, Ltd.	
Press. Hadfields 150-ton cold forming		Developments in ECM techniques ..	1450	Exhibition by .....	1455
Press. Hare type 2 B.S. 2-ton		Production planning and control. VISA		Pulley blocks. Morris LitaLift balanced	
hydraulic .....	1044	teaching aid for .....	1119	spur gear .....	663
Press. Lowey forging, Firth Brown		Proficorder (R) measuring machine.		Pulleys. Hoyer .....	883
install 800-ton .....	557	Micrometrical .....	1042	Pulleys, small V., Set-up on Lahyrol	
Press with 72 punches and dies.		Profile Accurascope. Caledonian type 55	1084	thread and form rolling machine for	
Chappuis .....	612	Profile gauging. Optical .....	883	producing, from mild steel blanks ..	1051
Press. Large roller bending .....	127	Profile grinders installed at Brock		Pulse-echo gauge, Use of Vaisgauge,	
Press line in the Ford factory at		Tools Ltd. Wickman optical .....	1338	for checking dimensions of	
Cologne. USI Changematic .....	1003	Profile milling machine, Cincinnati		integrally machined airframe part ..	374
Press. Powder metallurgy		30-in. bridge-type, with 3-axis		Pulse-echo unit for flaw detection.	
mechanical .....	1138	numerical control .....	950	Portable ultrasonic .....	374
Press for production of cemented		Profile milling machine. A Wickman ..	1282	Pump. S.E.M. coolant .....	779
carbide tool tips .....	315	Profile milling machine. Wilson		Pump. Sutcliffe 6-cylinder hydraulic ..	1165
Press. Russian-built 100-ton power		tape-controlled .....	627	Pump. Welch Duo-Seal No. 1402 rotary	
Press & Shear Machinery Co., Ltd.	485, 895	Profile projector. Microtecnica type		vacuum .....	1225
Press. Simon scrap baling .....	355	P 1000-A .....	1217, 1458	Pumps and ram units. Hydrodyn	
Press and tapping machine. Polich-		Profile tracing equipment. Optimec		hydraulic .....	1223
built PAWN 25 combined .....	366	Supertrace Mark II .....	144	Pumps. New Towler in-line hydraulic	
Press tools, Progressive, with		Profiledata programming of a Geneva		Pumps. New Vickers-Detroit range	
tungsten carbide inserts .....	818	wheel .....	494	of double intra-vane .....	151
Press. transfer, Watbury Farrel		Profiling, fully-automatic. Famco type		Punched-tape control. "American"	
type 1010 10-station .....	1002	112-21M duplex vertical milling		Economy lathe with G.E. type 1008	
Press. trimming, Erfurt type PEE/1		machine equipped for .....	1390	Punched-tape control, Cincinnati	
open-fronted .....	416	Profiling machine. flame, Savings		Acrumatic 330 3-axis, on Headrill	
Presses. adjustment of feed length on		effected with Hancock Han-co-sine ..	920	drilling, boring and milling	
roll feed, Bliss Power-Micro		Profiling operations. TOS Trencin		machine .....	995
equipment for .....	1057	type SV 18 RA high precision		Punched-tape control. Cintimatic	
Presses. cold extrusion, Transfer		toolroom lathe fitted with a		8-spindle turret drilling and	
feed unit for .....	198	hydraulic copying unit for .....	1279	milling machine with Acrumatic	
Presses. Contronics control unit for ..	886	Programme control, Brown Boveri,		330, 1050	
Presses designed for safety in operation.		on Werner BF 3 V bed-type milling		Punched-tape sequence control.	
Rigg pneumatic bench .....	1142	machine .....	1090	Pedersen type VPU-32 milling	
Presses. Gosmeta power .....	544	Programme control. Morando type		machining with .....	468
Presses. H.M.E. type G open-fronted		KL 14 vertical boring mill with ..	651	Punches. Anysize attachment for	
inclined .....	488	Programme control. Polish-built		grinding .....	1319
Presses. Marcatti inclined geared		vertical milling machine arranged		Punches and dies. Diamond finishing	
eccentric .....	96	for .....	365	of carbide .....	313
				Punches. Notching with Ferro-Tic ..	315

Punches. Steels for cold extrusion ..	22
Putty. Vypatch plastics .. ..	1143
Pye Laboratories, Ltd.: Smoothspeed Regulator for a.c. series motors .. ..	1108

## Q

Qualcut Tools, Ltd.: Qualcut-Komet precision threading tools .. ..	1421
See also .. ..	1259
Quality control centre. Vauxhall Motors new .. ..	1330
Quality control of iron castings .. ..	59
Quality and reliability - possibilities of cost reduction .. ..	1075
Quett Engineering, Ltd.: Flexyfinger handling tool .. ..	883
Quick Jet tap for blind holes. Warrior ..	771
Quicklock toolholders. Perman .. ..	887

## R

R.C.A. Ct. Britain, Ltd.: Broadcast & Communications Divn.: Electronics engineering service for exporters .. ..	947
RITT training system. Swedish Ericsson ..	819
RON incremental encoder .. ..	1317
Racks. Spur storage .. ..	1430
Radartronic unit providing for automatic adjustment of feed in accordance with motor power input and tool vibration .. ..	997
Radco Boilers Pty., Ltd.: Hot-oil industrial heating system ..	878
Radiator: Type B impulse counter .. ..	660
Radiographic non-destructive testing. Gamma radiation equipment for ..	1230
Railway truck axles. Snyder transfer machine for operations on .. ..	255
Raleigh Industries, Ltd.: Installation of Eico-Udyllite plating equipment for treatment of wheel rims by Tri-Ni nickel/chromium process ..	502
Rambaudi & Co.: Universal swivelling head for milling machines .. ..	534
Rank Organization: Rank Taylor Hobson Divn.: The Rotary Talysurf .. ..	301
"Fibre optics" development .. ..	558
Talysurf peak-height meter .. ..	770
Temperature-controlled room for Matrix thread grinder .. ..	1276
Rank-Xerox copying machines. Continuous milling small aluminium components for .. ..	330
Ransome & Marles Bearing Co., Ltd. ..	1396
Ransomes, Sims & Jefferies. Further expansion at the works of .. ..	785
Rapid Tap cutting fluid .. ..	75
Rapistan hinged steel plate conveyors ..	772
Rational Instruction and Training with recorded tapes (RITT system) ..	819
Read, L.C., A.M.I. Mech. E., A.M.I. Prod. E.: Gear cutting tools .. ..	752, 862, 1123
The gear shaping process - some special applications .. ..	1208
Reamers. "Drill Service" carbide- tipped .. ..	262
Reamers with throw-away blades. Mapal W.P. .. ..	1259
Recirculating ball screws. Some interesting operations on .. ..	908
Reclaiming damaged shafts with keyways .. ..	70
Reclaiming tractor components. Automatic welding machine for ..	1194

Reclaiming a vehicle crankshaft. Colmonoy type S100 Fusewelder for Reconditioning electrical components by diamond turning .. ..	1034
Recording apparatus for measuring wear on a flat die surface. D.F.R.A. ..	1376
Recording surface-finish measuring machine. Russian type 201 .. ..	875
Rectifier units. Canning silicon .. ..	1157
Red Ring Super-Speed gear shaver .. ..	996
Red Ring type VBA 25-ton pot broaching machine .. ..	1052
Redman Tools, Ltd.: Machine for piercing window frames Uni-Pierce tool for applying Tolwood Piercemuts to sheet steel panels ..	1310
Redumat tube reducing machines. Veenstra .. ..	763
Reed switches and their application. Hamlin .. ..	655
Reel. New Marcaddy hand cable .. ..	73
Refrigerators. Making cabinet doors for Frigidaire .. ..	268
Refrigerators. Making condensers for Frigidaire .. ..	740
Regulator for a.c. series motors. Pye Smoothspeed .. ..	60
Regulator for butane and propane gas. Cadet .. ..	1108
Regulator. Norgren precision air- pressure .. ..	268
Reid & Sigrist, Ltd.: An interesting machine for stud production .. ..	772
Reiden Werkzeugmaschinenfabrik AG.: Type HF 300 horizontal milling machine .. ..	358, 507
Reifenhauser plastics extruding machine for cartridge cases .. ..	651
Relay. Eurotherm hermetically-sealed miniature .. ..	1225
Relays. Keyswitch P33VT range of ..	560
Reliance Gear Co., Ltd.: Programming for a Hardinge lathe equipped with Elliott sequence control ..	1394
Relton Corporation .. ..	917
REMEX/Rheem Electronics high-speed tape reader and re-spooler .. ..	75
Renault automatic assembly machine for steering arms .. ..	1384
Renold Chains, Ltd.: Sprag clutches for indexing, over- running and back-stopping .. ..	316
Renwell 4-axis numerical control. Bullard 46-in. Dynatrol vertical turning and boring mill with .. ..	322
Research and development block for Dust Control, Ltd. .. ..	590
Research and development centre. Teleflex .. ..	1288
Research & Engineering Controls, Ltd.: Resistance thermometer elements to new British Standards .. ..	50
Research to facilitate computer design of machine tools. M.T.I.R.A. .. ..	641
Research into fine-blanking .. ..	104
Research Instruments, Ltd.: DSP/S10 micro-manipulator .. ..	1049
Resonance method. Equipment for testing by the .. ..	1207
Rheem Electronics Divn., Ex-Cell-O Corp.: High-speed taped reader and re- spooler .. ..	375
Vu-Point direct-reading positioning indicating equipment on Microtecnica profile projector .. ..	1384
Vu-Point position display equipment for contour projector .. ..	1217
Rhodes, Joseph, & Sons Ltd.: 8-ft. Hydraveral hydraulic shear ..	593
Guillotine shears with epicyclic gear drive .. ..	483
Rhodes, Lord, Speech by, to the M.T.T.A. .. ..	768
	787

Richards, George, & Co., Ltd.: BMO4 Electramill vertical boring and turning mill .. ..	PAGE
Installation in works of three of company's boring machines .. ..	1038
Richards Tools & Mold Co.: Unit die holder .. ..	216
Richmond Machine Tool Co., Ltd.: Demonstration coach fitted with SR 3 36-in. radial drilling machine and No. 2 universal milling machine ..	942
Ridge Tool (UK), Ltd.: Ridgid pipe threading machine ..	503
Rigg Bros. (Tools), Ltd.: Pneumatic bench presses designed for safety in operation .. ..	821
Rigbed tape-controlled horizontal drilling, milling, tapping and boring machine. Lahr .. ..	1142
Rigid, Ltd.: Type KAB 50 N bed-type milling machine with Olivetti Zig-Zag CNZ numerical control .. ..	599
Type KAB 50 copy milling machine ..	1431
Ring, EST master setting, calibrating service .. ..	702
Ringspan free-wheel unit .. ..	435
Rivet bush. Willock self-locking ..	265
Riveting equipment. Hydraulically- operated cold .. ..	321
Riveting set-up on Elmeg press .. ..	720
Robert & Scheider: Combined Swiss automatic and rotary transfer machine .. ..	118
Robertson, W.H.A., & Co., Ltd.: Licence to build cantilever rolling mills .. ..	1110
Robinson, F.J., B.Sc., A.Inst.P.: A digital position servomechanism 505 ..	434
Robinson, F.S. & A., Ltd.: Dispenser for Larcher end milling cutters .. ..	1097
Roboting system serves assembly shop ..	133
Rocco type AP.88 horizontal boring machine .. ..	309
Rocket. Saturn V. Large aluminium alloy forgings for .. ..	464
Rockford Machine Tool Co.: Hy-Draulic Synchro Trace milling machine for production of deep die and mould cavities .. ..	209
Rockwell hardness tester. Eseway fully- automatic .. ..	693
Rockwell Machine Tool Co., Ltd.: Arrangements for building and selling Version presses in the U.K. .. ..	830
See also 22, 477, 583, 693, 706, 891, 952, 992, 997, 998, 1090, 1150, 1154, 1271, 1276, 1386	722
Rocol, Ltd.: New aerosol lubricant .. ..	932
Rogowski electron optics systems ..	803
Roll grinding machines. Churchill type TWB and TWR heavy-duty .. ..	758
Rolls. Ductile iron .. ..	1274
Rolls, bending Kingsland drop-end power Rolls-Royce, Ltd.: Installation of Alfa-Laval TurboMatic coolant clarifying system .. ..	256
Use of Polymathic Coolie and Cub trucks .. ..	1063
Roller bending press. Large .. ..	127
Rolling. Automatic taper .. ..	880
Rolling machine. thread and form. Set-up on Lanhyrol .. ..	1051
Rolling mills. Robertsons to build cantilever .. ..	434
Rolling this metal sheet. A new process for .. ..	150
Room. Temperature-controlled, for Matrix thread grinder .. ..	1276
Rosa, Ermano: Type ER 64 turning tool .. ..	1141
Rotacome twist drill grinder. Brierley ..	478
Rotarix Transmatic 710 machine. Swiss-built .. ..	1110

	PAGE
Rotary Proficorder measuring machine.	
Micrometrical. . . . .	1042
Rotary Talsurf. The . . . . .	301
Rotax Precision Products:	
Some interesting operations on	
recirculating ball nuts . . . . .	908
Roto-Finish, Ltd.:	
Spiratron deburring machine . . . .	103
Spiratron deburring machine	
demonstration . . . . .	884
Rotor shafts, Set-up for threading and	
knurling, at one operation on Landis	
Lanhyrol machine . . . . .	1267
Roundness, Factors affecting the	
achievement of, by centreless	
grinding . . . . .	984
Roundway bearings for electron beam	
welder tables . . . . .	1396
Rout-O-Mill for high-speed milling and	
routing with Bunker-Ramo 3100	
2-axis continuous path control.	
Ekstrom-Carlson No.444 . . . . .	696
Rowe, Dr. W. B.:	
Factors affecting the achievement of	
roundness by centreless grinding . .	984
Rowland, F. E., & Co., Ltd.:	
Duplex grinder for brake discs . .	1139
Royce vacuum sintering furnace . .	314
Rowley, W. R. C., B.Sc., Ph.D.:	
The laser applied to automatic scale	
measurement . . . . .	780
Royal College of Advanced Technology:	
Research into fine-blanking . . . .	1049
Royal McBee Nederland NV.:	
Installation of versatile electro-	
plating machine . . . . .	1037
Royal Mint, G. E. C. coin blank handling	
equipment at the . . . . .	1258
Royal Ordnance Factory, Nottingham:	
Production control, work-handling and	
communications systems for batch	
work . . . . .	684
Rubert & Co., Ltd.:	
Mechanical surface-roughness	
indicator . . . . .	545, 731
Rubery Owen & Co., Ltd.:	
Supply of Hallsworth automatic foundry	
plant to Czechoslovakia . . . . .	614
Ruling master diffraction gratings .	302
Russian machine tools at the Paris Fair	303
Russian machine tools. Some recent	
developments in . . . . .	76
Russian measuring equipment. Some	
recent developments in . . . . .	872
Rust inhibitor. Motorstor vapour phase	254
Ruston Group:	
AO 2-stroke diesel engine . . . .	86
Ryan Aeronautical Co.:	
Dip brazing ensures high-quality	
waveguides . . . . .	1325
Ryder, Thomas, & Son, Ltd.:	
Visit by German industrialists . .	102

## S

S. E. A. tape control system on Cornac	
Stabimajor horizontal boring, milling	
and semi-jig boring machine . . .	1435
S. E. M. coolant pump . . . . .	779
S. I. M. I. foundry Milan. Pressure die	
casting in the . . . . .	201, 707
SMG large-capacity fine-blanking presses	562
Saab Electronic:	
MTC 5 numerical control system on	
Torashilla Holmester co-ordinate	
drilling and boring machine . . .	887
Sacem-Zipp saw sharpening machine .	262
Sachman-Inger Regio Emilia:	
Type FAS 1500 vertical milling machine	899
Safety circuit, Panex electronic, on	
gamma radiation equipment for radio-	
graphic non-destructive testing . .	1230
Safety in operation. Riggs pneumatic bench	
presses designed for . . . . .	1142

Salvaging large components. Arc-Out tap	
eroder attachment to facilitate . .	979
Sanders Associates Inc.:	
Flexiprint printed circuits . . . .	637
Sanders, W. H., (Electronics), Ltd.:	
Electric motor control unit . . . .	935
Sandvik Swedish Steels, Ltd.:	
Coromant Ejector Drill . . . . .	559
New carbide tooling. . . . .	559
Satmumetal magnetic material . . .	1424
Saturn V rocket. Large aluminium alloy	
forgings for . . . . .	209
Sauter, Trist-, heating and humidity	
controls . . . . .	425
SAVA diesel engine plant. James	
Archdale major suppliers to . . .	396
Savage & Parsons, Ltd.:	
Extended range of Spur industrial	
storage equipment . . . . .	1430
Saw bands. Eclipse metal cutting. .	547, 619
Saw sharpening machine. Sacem-Zipp .	262
Saw. Trennjaeger cold . . . . .	349
Sawing attachment, circular, set up on	
Bardons & Oliver No. 35 cutting-off	
lathe . . . . .	1052
Sawing machine, Loma tilting-arm, for	
high-speed cutting-off with tungsten	
carbide tipped tools. . . . .	606
Sawing machine. Trennjaeger Variant	
NE 250 transportable cold . . . .	1221
Saxl, K., Dr., Ing.:	
A new process for rolling thin metal	
sheet . . . . .	150
Scale measurement. The laser applied to	
automatic . . . . .	730, 780, 795
Scales. Producing precision optical	
angular . . . . .	865
Scharmann & Co., Germany:	
Tape-controlled boring and milling	
machine for operations on excavator	
components . . . . .	1229
Type FB 50/75 numerically-controlled	
horizontal boring and milling machine	
Scharmann Machine, Ltd. . . . .	1218
Schaudt type ERS cylindrical grinder with	
automatic work-loading equipment .	534
Scheu-Schwartzkopf G.m.b.H.:	
Type DRF 70N turret lathe with	
Grundig numerical control equipment	
and Zeiss Multipriamat slide	
measuring equipment . . . . .	1087
Schneider & Kern:	
Helios dial indicator measuring	
instruments . . . . .	504
School, New apprentice, for Leeds-based	
companies of the 600 Group . . . .	724
Sclaky Electric Welding Machines, Ltd.:	
Electron beam welding machine . .	972
Special-purpose 3-phase projection	
welding machine . . . . .	92
Scientific Instruments. New Honeywell	
Scientific Systems, Ltd.:	
A projected experimental numerical	
control system . . . . .	131
Scouters. Die cast components for motor	
Scope numerical point-to-point control	
equipment. Cabinet containing . .	1313
Scope 200 series numerical control	
equipment, Ferranti, on Vero . . .	1088
Autodrill . . . . .	1088
Scope tape-controlled co-ordinate	
positioning equipment. Ferranti . .	481
Scot Urquhart, Ltd.:	
Criterion tapping and threading	
attachments . . . . .	241
See also . . . . .	262
Scott Viner Co.:	
Tin improves machinability of cast	
iron. . . . .	34
Scrap baling press. Simon . . . . .	355
Scrap-chopping machine. John Marshall	
mobile . . . . .	23
Screw compressor. Howden large-	
capacity . . . . .	86
Screw and nut assembly. Calfax	
Boydolt self-locking . . . . .	720

Screw sizes for ease of insertion.	
Selection of . . . . .	1116
Screw threads. BSI statement of policy	
on metric . . . . .	1226
Screws. Hottite Taptite thread rolling .	721
Screws. recirculating ball, some	
interesting operations on. . . . .	908
Screws and threaded inserts. Long-Lok	
vibration-resistant . . . . .	721
Screwcutting lathe. Boxford Vari-speed	462
Screwmaking industry conference.	
International . . . . .	504
Sculfort-Salomé S.A.:	
Synchromat tape-controlled lathe .	1432
Sculpting machine Hungarian automatic	1391
Seal, oil, designs. New . . . . .	1096
Seam welding machine. Automatic corner	747
Selling to "socialist" countries . .	980
Sellotape Products, Ltd.:	
New masking tapes . . . . .	611
Senzimir steel strip rolling mill. Set-up	
on Swift lathe for machining outer ring	
of support bearing for a . . . . .	783
Senzimir Inc. . . . .	151
Sequence control equipment. Develop-	
ments in connection with Elliott .	548, 646,
	917
Sequence control. Programming for a	
Hardinge lathe equipped with Elliott	
Sequencers. Wild powered storage . .	1212
Serbex butt-weld backing system . .	72
Servo actuator. Vactric rotary . . .	765
Servo control equipment. Sperry . .	972
Servo-mechanism. A digital position	805, 1097
Servo-mechanisms. Overload protection	
unit for use with . . . . .	91
Servo motors. Minertia . . . . .	412
Set-up on C. V. A. auto. Deep rear-end	
and cross-drilling . . . . .	751
Set-ups on Petermann automatics. Some	
examples of . . . . .	146
Set-ups. Possibilities of multi-operation,	
for batch work . . . . .	1019
Setting ring calibrating service.	
EST master . . . . .	435
Setting templates reduce changeover time	368
Setting units, Special boring heads and,	
for horizontal borer . . . . .	825
Sewing machine bases. Set-ups on Singer	
special-purpose machine tools for .	1408
Sewing machine components. Pressure	
die casting Singer . . . . .	1158
Sewing machines. Making Singer . .	828, 984,
	1158, 1408
Shaft, transmission, assemblies. Steel-	
weld fully-automatic friction welding	
machine for . . . . .	816
Shafts. Hard-facing dragline roller .	420
Shafts. Reclaiming damaged, with	
keyways . . . . .	70
Shafts, rotor, Lanhyrol machine set up	
for threading and knurling, at one	
operation . . . . .	1267
Shaping machine. Indian-built Cooper	
type AS 24 . . . . .	376
Shaping machine. Russian-built Kirov	
type GD-21 hydraulically-operated	
copy . . . . .	83
Shardlow, Micrometers Ltd.:	
Producing micrometers and height	
gauges . . . . .	235
Sharpening diamond tools. Caledonian	
type 55 Profile Accurascope for . .	1084
Sharpening machine. Sacem-Zipp saw .	262
Shear finishing spur and helical gears.	
Fellows Fini-Shear machine for . .	608
Shear. Lodge & Shipley Accra-Blank .	602
Shear. Rhodes 8-ft. Hydraversal	
hydraulic . . . . .	483
Shears, Rhodes guillotine, with	
epicyclic gear drive . . . . .	768
Sheet edges. Moon automatic grinder for	
Sheet. A new process for rolling thin	
metal . . . . .	150



	PAGE		PAGE		PAGE
Sheffield Corporation:		Skoda type SIU 100 numerically-		Somua, H. Ernault:	
Cordax measuring machine .. ..	689	controlled centre lathe .. ..	1277	Merlin & Gerin equipment for direct	
Numerically-controlled 3-axis		Skoda SK 125 B vertical turning and		measurement of large workpieces	
measuring machine .. ..	689	boring machine of unusual design	554, 622	produced on roll turning lathes, roll	
Optical flaw detector .. ..	690	Slabs and blooms, Cutting-off, to weight	879	grinders and vertical boring mills ..	1317
Super-Jet wheel cleaner .. ..	689	Slack & Parr, Ltd.:		Soniprobe. Ultrasonic mixing with a ..	372
Sheffield Twist Drill & Steel Co., Ltd.:		Vertical drilling machine fitted with		Sorting manually-loaded parts. Compac	
Dormer series 2 Heli-Matic holder		Zagar-Dex gearless multi-spindle head	1046	equipment for gauging and .. ..	1222
for screwed-shank tools .. ..	263	Slide unit. Standard Singer hydraulic feed	636	Southern Engineering & Machinery Co.	469
Dormer type 78 twist drill grinder ..	477	Slide units. Polish-built hydraulic ..	366	Spacesaver storage installation at	
Sheldon Machine Co., Inc.:		Slide unit for transfer machines. Polish		Vauxhall Motors .. ..	439
15-in. centre lathe .. ..	696	hydraulic .. ..	365	Spanish diesel plant. James Archdale	
Shell Chemical:		Slots. Metoh eccentric toolholder for		major suppliers to .. ..	396
Autopert system of producing critical		machining .. ..	1140	nozzles. Modified Ewag WS 11	
path analysis networks .. ..	298	Slotting machine column. Meehanite		machine for milling intricate contours	
Shell-Mex & B. P., Ltd.:		metal casting for .. ..	376	on tungsten-carbide electrodes	
Irus hydraulic fluid 902 .. ..	529	Slotting machine. HJ type-300 .. ..	95	employed for .. ..	1115
Shelton Iron & Steel, Ltd.:		Small Electric Motors, Ltd.:		Spark machining grooves in pneumatic	
Installation of automatic flame cutting		Coolant pump .. ..	779	gauging members .. ..	1146
machines in a continuous casting plant	1275	Smith, S., & Sons (England) Ltd.:		Sparkling plug bodies. Set-up on Acme-	
Ships. Production of auxiliary equipment		Aviation Divn.:		Gridley HSC-6 chucking automatic for	
for .. ..	340	Installation of Sciaky electron beam		machining cold-extruded blanks for ..	1051
Shipbuilding. Installation of Elliott 803		welding machine .. ..	972	Sparkonite 10 tubing for spark machining	
computer in Gdansk office for use in		Smoothspeed Regulator for a.c. series		electrodes .. ..	127
connection with .. ..	618	motors. Pye .. ..	1108	Sparton Electronics:	
Siemens Sinumerik control cabinet on		Snow & Co., Ltd.:		Use of forming machine with urethane	
Fortuna-Werke grinder .. ..	775	30-in. double disc grinder .. ..	666	roll .. ..	186
Sigma automatic size control unit for		Steel slab grinder fitted with dust		Spaulding, Ltd.:	
grinding machine .. ..	1025	extraction equipment .. ..	352	Printed circuit test panels .. ..	1194
Sigma gauging installation for crankshafts	815	Type CSG 36-in. heavy duty coil		Special-purpose machine tools.	
Silicon rectifier units. Canning .. ..	1157	spring end-grinding machine .. ..	666	Operations on Singer .. ..	1408
Silvaflame Co., Ltd.:		Type HR 15 horizontal table rotary		Special-purpose machine tools. Welded-	
Cleervue Weldguard .. ..	1094	surface grinder .. ..	666	steel structures for .. ..	1104
Silver plating threads to prevent seizure	835	Type SG 72/25 open-side slideway		Special-purpose machines. Meddings ..	404
Silverstreak 1000 welding and flame-		grinder .. ..	666	Specialmatic numerically-controlled	
cutting torch set. Suffolk Iron Foundry		grinder .. ..	157	turret lathe. Jones & Lamson ..	1385
type S.I.F. .. ..	184	Visit from German industrialists		Specifiable Co-ordinate Positioning	
Sim, R.M.:		Snow, Lord, Visit of, to Brussels		Equipment (SCOPE) .. ..	481, 1089, 1313
Numerically-controlled machine tool		Exhibition .. ..	620	Spectra Chemicals, Ltd.:	
programming .. ..	1356	Snow Manufacturing Co., U.S.A.:		Spray-Clene cold cleaner .. ..	927
Simmonds Relays, Ltd.:		Snow-Matic indexing table for multiple		Speed increasing adapters. "pbc" spindle	1324
Visolux photo-electric counters ..	425	tooling on lathes and other machines		Speed variators. Air-operated equipment	
Simon Handling Engineers, Ltd.:		Type DR vertical drilling machine with		for the remote control of Kopp ..	875
Scrap baling press .. ..	355	air-operated and electrically-		Speedrill tape-controlled drilling machine.	
Simplex-GE Manfg., Ltd.:		controlled working cycle .. ..	691	Middlesex NC 100 .. ..	936
Electrical control equipment .. ..	1059	Snyder Corporation:		Speetog toggle clamps. Brauer ..	1224
Simplimatic chucking lathes. Machining		Transfer machine for operations on		Spencer Franklin, Ltd.:	
brake drums on Gisholt .. ..	930	railway truck axles .. ..	255	PowBlock clamping equipment	
Sine bar. O.M.T./N.P.L. kinematic ..	519	Soag Machine Tools, Ltd.:		reduces time of milling operation ..	893
Singer Manufacturing Co., Ltd.:		Stanley skin packaging system ..	291	Spheroidal graphite iron. Harper	
Making sewing machines .. ..	628, 964, 1408	See also .. ..	210, 468, 541, 642, 657, 1434	conference on .. ..	1064
Operations on special-purpose		"Socialist" countries. Selling to ..	980	Spheroidal graphite iron - probable	
machine tools .. ..	1408	Societa' Italo-Svizzera Metallici Inietti:		pattern of development .. ..	1274
Pressure die casting sewing machine		Pressure die casting in the Milan		Sperry Gyroscope Co., Ltd.:	
components .. ..	1156	foundry .. ..	201, 707	Numerical control equipment on	
Sint s.r.l.:		Société Alsacienne de Constructions		Société Genevoise 5E CN jig borer ..	890
Multi-spindle drilling machine ..	656	Atomiques de Telecommunications et		Servo control equipment .. ..	972
Sintercast Divn., Chromalloy Corpn.:		d'Electronique:		"Spin" table unit set up on No. 3 jig	
Ferro-Tic notching punches .. ..	315	Graffenstaden type TVFA 121 H		grinder. Moore .. ..	1167
Sintered carbide tools. Chinese ..	762	vertical boring mill with G.E. Mark		Spindle braking system. A new machine	
Sinumerik control cabinet on Fortuna-		100S continuous-path control ..	1214	Spindle speed increasing adapters. "pbc"	
Werke grinder Siemens .. ..	775	Graffenstaden type FB 616 SD CN		Spindle, worm, Set-up on Petermann	
600 Group. New apprentice school for		ram-type milling machine with Plessey		automatic for production of, from	
Leeds-based companies of the ..	724	Mark III tape control .. ..	1318	brass bar .. ..	146
Size Control Co.:		Société d'Electronique et d'Automatisme:		Spindles. Developments in connection	
Airtronics Instrument Laboratory		Tape contr. equipment on Cornac		with Westwind air-bearing .. ..	188
Divn.:		Stabimajor horizontal boring, milling		Spinning and flow turning lathe for	
Inchworm precision linear actuator ..	1053	and semi-jig boring machine ..	1436	Boeing. Kellinghaus .. ..	71
Size control system for lathes. V.D.F.		Société Genevoise d'Instruments de		Spiratron deburring machine. Roto-	
Diamatic .. ..	1137	Physique: 5E CN jig borer with Sperry		Finish .. ..	103, 684
Size control unit for grinding machine.		numerical control .. ..	890	Spline grinding machine. Russian-built	
Sigma automatic .. ..	1025	Société Genevoise, Ltd. .. ..	890	Moscow type 3451B .. ..	80
Size Finder, Landis type 4R, cylindrical		Société Tréfinmetaux:		Spools. valve, Vero 18-spindle tape-	
grinder .. ..	948	Nimonic 90 die inserts for extruding		controlled Autodrill for operations on	
"Skates" used to support large workpieces		copper .. ..	613	Sprag clutches for indexing, over-running	
on horizontal borer .. ..	824	Socket-outlets for laboratories. Movable		and back stopping .. ..	322
Skeen, S.A.:		Solartron Electronic Group, Ltd.:		Spray booth and dipping tank. Combined	
High-velocity forging .. ..	228	Producing tangential-flow fan heaters		Spray-Clene cold cleaner. Spectra ..	927
Skeko Ball Bearing Co., Ltd.:		Solder. Enthoven thermal-free ..	239	Spraying equipment. Aerograph-	
Training with the aid of a tape recorder		Solder. Fine-gauge Multicore ..	1262	DeVilbiss electrostatic .. ..	250
Skl (Gt. Britain), Ltd.:		Solder, Tool for removing molten, from		Spraying machine. Binks-Bullows type	
Type 587B 5 variable-speed electric		the work .. ..	1145	L4103 automatic .. ..	417
drill .. ..	1220	Solderability test machine. "Multicore		Spring, coil-, end grinding machine.	
Skin packaging system. Stanley ..	291	Solders" .. ..	561	Snow type CSG 36-in. .. ..	667
Skoda 1000MB car. Light alloy castings		Soldering iron. Antex type G ..	419		
in the production of the .. ..	1439				

	PAGE		PAGE		PAGE
Springfield Machine Tool Co.:		Strip, feeding coiled, to presses.		Sykes Machine Tool Co., Ltd.:	
Opro-Turn lathe with Cincinnati		Combined decoller and straightening	1142	Visit of British engineers to	
Telematic 111 control equipment ..	953	machine for .. .. .		Boehringer and Diederichs works ..	1062
Type 1B-TR vertical-spindle universal		Strip material. Welded tubes produced	971	See also .. .. .	1037, 1138, 1369
grinder with Hydro-Centric hydro-		from spirally-wound .. .. .	40	Sykes, W. E. Ltd.:	
static bearings .. .. .	1155	Structural bonding of aluminium ..		Gear cutting tools .. .. .	752, 862, 1123, 1208
Sprockets. Automatic assembly of dowels		Structural milling machine for large flat		The gear shaping process - some	
to .. .. .	820	surfaces. Hill Acme .. .. .	605	special applications .. .. .	1208
Spur industrial storage equipment.		Stud production. An interesting machine	356, 507	Synchro-Trace machine for production of	
Extended range of .. .. .	1430	for .. .. .		deep die and mould cavities. Rockford	
Square. 3-dimensional optical .. .. .	294	Stud, Set-up on Petermann automatic for		Hy-Draulic .. .. .	693
Stabimajor tape-controlled horizontal		production of, from mild steel		Synchromat tape-controlled lathe.	
boring, milling and semi-jig boring		hexagon bar .. .. .	147	Sculfort-Salomé .. .. .	1432
machine. Cornac .. .. .	1435	Stud welding on ships' boiler tubes ..	344	Synchronous motor. New Vacuyn slow-	
Stainless steel plate. Pressure vessel		Stud-welding unit. Cromparc 875 ..	1042	speed .. .. .	988
fabricated from Firth-Vickers ..	726	Studer RHU 500 hydraulic universal			
Stainless steel surface coating system.		grinder .. .. .	1114		
Pitan .. .. .	1084	Sud Aviation:			
Stand. instrument supporting, "Polar		Installation of large Cramic tape-			
Hydraulics" .. .. .	72	controlled drafting machine .. .. .	581		
Standard Telephones & Cables, Ltd. ..	936	Installation of Lofline vacuum			
Standards Department of the M. T. T. A.		printing table .. .. .	1173		
The work of the .. .. .	307, 448	Suffolk Iron Foundry (1920), Ltd.:			
Stanley-Bridges, Ltd.:		Type S.I.F. Silverstreak 1000 welding			
Installation of experimental Stanley		and flame-cutting torch set .. .. .	164		
skin packaging line .. .. .	291	Sunbeam Coal Corp.:			
Stanley, V.W., B.Sc.:		Hard-facing dragline roller shafts ..	420		
The laser applied to automatic scale		Sundstrand Corporation:			
measurement .. .. .	780	Sundstrand Machine Tool Divn.:			
Stanley Works (Gt. Britain), Ltd.:		Omnimil tape-controlled "machining			
Skin packaging system .. .. .	291	centres" .. .. .	19		
Stanton Machine Tools, Ltd. .. .. .	457	Super-Jet wheel cleaner. Sheffield	689		
Starrett, L. S., Co., Ltd.:		Super-Speed gear shaver. Red Ring ..	996		
Hook-Tooth bandsaws .. .. .	35	Superheater Co., Ltd.:			
Starter. Donovan type A44 automatic		Automatic welding equipment for heat			
star-delta .. .. .	570	exchangers .. .. .	408		
Starter unit. B. & R. Relays on-line ..	296	Superspeed 946 aluminium alloy ..	1034		
Stationary-spindle process for swaging		Supertrace Mark II profile tracing			
parts of various cross sections ..	1380	equipment .. .. .	144		
Stator laminations. Evo-Stik adhesive		Supexco Lubricants, Ltd.:			
used for bonding .. .. .	817	Thread cutting sticks .. .. .	1123		
Staveley-Smith Controls, Ltd.:		Supporting stand. "Polar Hydraulics"			
Continuous-path control system ..	32	instrument .. .. .	72		
Stayput dial indicator gauge .. .. .	750	Supporting large workpieces on			
Steamturbines. Modern practice in the		horizontal borer. "Skates" used for			
design and production of .. .. .	1204	Sure-Line automatic bandsaw blade			
Steel block. Set-up on Carlton radial		controller .. .. .	1271		
drilling machine for cutting a 10 1/4-in.		Surface coatings. New Emralon ..	297		
hole in a .. .. .	1057	Surface Finish & Measurement, Ltd. ..	1141		
Steel for extrusion rams. Maraging ..	345	Surface-finish measuring machine.			
Steel gears. High-speed hobbing of ..	36	Russian type 201 recording .. .. .	875		
Steel. maraging. Large forgings of ..	871	Surface finish. Micrometrical guide to	608		
Steel slab grinders. Dust extraction		Surface finish obtainable with abrasive			
installation for .. .. .	352	machining .. .. .	179		
Steels for cold extrusion punches		Surface-roughness indicator. Rubert			
Steelweld, Ltd.:	22	mechanical .. .. .	545		
Fully-automatic friction welding		Surface Treatments, Ltd.:			
machine for transmission-shaft		Anti-corrosion products .. .. .	68		
assemblies .. .. .	816	Surfaces. The Rotary Talsurf			
Steering arms. Renault automatic		instrument for checking convex and			
assembly machine for .. .. .	316	concave .. .. .	301		
Steigerwald electron optics system ..	803	Surfacing alloys. New Fontargen ..	1395		
Sterling-Detroit unit die casting die		Surfacing machine. Kearns type 724P			
system .. .. .	941	horizontal milling, boring and			
Stewarts & Lloyds, Ltd.:		Sutcliffe, Richard, Engineering Systems,			
Serbex butt-weld backing system ..	72	Ltd.:			
Stitching machine. Bostitch metal ..	718	6-cylinder hydraulic pump .. .. .	1165		
Stoculator order quantity calculator ..	1045	Sutton Engineering Co., U.S.A. ..	382		
Stoddart, T.A., M.I. Prod. E.:		Swaging parts of various cross sections.			
High-speed hobbing of steel gears ..	36	The stationary-spindle process for ..	1380		
Storage equipment. Extended range of		Swarf conveyor and filter. Magnetic ..	664		
Spur industrial .. .. .	1430	Sweep Delay Correlator. Honeywell			
Storage equipment. Pinder Versatool		type 9410 .. .. .	1328		
range of tool and component .. .. .	1222	Swench hand-operated impact wrench.			
Storage installation at Vauxhall Motors.		Curtiss-Wright .. .. .	719		
Spacesaver .. .. .	439	Switch. A.S.B. magnetic proximity			
Storage sequencers. Wild powered ..	1212	detector .. .. .	1207		
Straftoplan planning board. 12,000-item		Switch. Brownell's Partnership			
Straightening. Bar, and tube de-rod-		LucySwitch pressure .. .. .	44		
drawing machine. Bronx type BRO ..	1044	Switch. Herga waterproof foot .. .. .	1395		
Straightening machine. Combined		Switch. Mulli-, Contraves type G ..	23		
decoller and .. .. .	1142	Switch for printed circuits. Push-button	1306		
Straightening press. Fromag type		Switches, Hamlin reed, and their			
DP 15/2000 .. .. .	654	application .. .. .	73		
		Switchgear. Electroloid heavy-duty ..	130		

# T

T.I.M. instrument for checking tooth	
spacing. Fellows No. 8 .. .. .	608
T-Sert self-locking threaded inserts ..	721
TOS Celakovic type S 32 "artistically-	
styled" universal centre lathe .. .. .	1280
TOS Trenchin type SV 18 RA high-	
precision toolroom lathe .. .. .	1279
TRW Inc.:	
Planning for numerical control ..	521
Taber Instrument Corp.:	
Type 906-5 automatic centresless	
machine for turning stepped and	
profiled forms on shafts .. .. .	1157
Table. angle-measuring, Russian	
induction-optical .. .. .	875
Table, co-ordinate setting. Grimston-	
A.E.I. tape-controlled .. .. .	43, 105
Table. Moore type 1440 precision	
indexing .. .. .	1167
Table. rotary indexing, Electromagnetic	
clutches and brakes for .. .. .	939
Table unit, Moore "spin", set up on	
No. 3 jig grinder .. .. .	1167
Table. Use of tape-controlled rotary,	
for producing precision optical	
angular scales .. .. .	865
Tables. Building precision into OMT	
optical rotary .. .. .	284, 516
Tables. electron beam welder,	
Roundway bearings for .. .. .	1396
Tadco Autogard tapping attachment ..	547
Taft-Peirce Manfg. Co.:	
No. 2 surface grinder .. .. .	1388
Tailstock bearing arrangement on a	
large lathe .. .. .	582
Talsurf peak-height meter. New ..	770
Talsurf. The Rotary .. .. .	301
Tangyes, Ltd. .. .. .	197
Tanks. Set up for milling the faces of	
header .. .. .	893
Tap for blind holes. Warrior Quick	
Jet .. .. .	771
Tap & Die Corp. Ltd.:	
Tadco Autogard tapping attachment	
Tap eroder attachment to facilitate	
salvaging large components.	
Arc-Out .. .. .	979
Tapac IV numerical control system on	
DeVlieg type K Jigmill .. .. .	588
Tape control. Cincinnati CIM-X	
machine arranged for .. .. .	616
Tape control. Circuit diagrams	
produced under .. .. .	1144
Tape control. Contraves, Henschel	
type F 081 plano-milling machine	
fitted with .. .. .	1088
Tape control equipment. Czech magnetic	
Tape control equipment for machine	
tools - A survey of continuous-path	
systems .. .. .	24
Tape control equipment. Plessey Mark	
III, on Werner type BF 3 V bed-type	
milling machine .. .. .	1091
Tape control system, Asea NSL 102,	
on Köpings vertical milling	
machine .. .. .	1092

	PAGE		PAGE		PAGE
Tape control system. General Electric 103PB, Avey turret-type drilling, boring and milling machine with ..	998	Tapping and threading attachments. Criterion ..	241	Numerically-controlled lathes "American Tool Works" square tool turret for ..	1053
Tape control system for machine tools. I.A.E. ..	379	Taptite, Holtite, thread rolling screws Tarex (England), Ltd.: Demonstration of Dabied copying lathes arranged for "discontinuous automation" ..	721	Thermograph industrial infra-red camera ..	185
Tape control system. Plessey Mark III	545	Tata Engineering & Locomotive Co., Ltd.: Machining brake drums on Gisholt Simplicatic chucking lathes ..	1425	Thermometer elements to new British Standards. Resistance ..	641
Tape control system, Plessey Mark III, on Graffenstaden ram-type milling machine ..	1318	Taylor Robert, Machine Tools, Ltd.: "Open week" at new premises ..	930	Thielenhaus Microfinish machines. Typical parts with surfaces which have been highly finished on ..	672
Tape-controlled Autodril for operations on valve spools. Vero 18-spindle ..	269	Teaching aid for production planning and control. VISA ..	1006	Thienes, Friedr. Wilhelm: Work-holding clamps and vices ..	295
Tape-controlled boring and milling machine. Scharmann ..	1229	Teaching machine. E.S.L. type TM. 1024 ..	1119	Thin metal sheet. A new process for rolling ..	150
Tape-controlled chucking lathe. Monarch type 220 N/CC ..	1386	Technical Development Co. ..	971	Thomas, G.A.H., B.Sc.: A digital position servo-mechanism ..	805, 1097
Tape-controlled co-ordinate positioning system. Ferranti Scope ..	481	Technical Marketing, Ltd.: Low Cost Automation Exhibition ..	641	Thompson Grinder Co.: Type PC 24- by 36- by 96-in. Dial-A-Matic surface grinder ..	1154
Tape-controlled drafting machine. Large Cramic ..	43, 105	Technitron, Ltd. ..	972	Thomson Industries: Roundway bearings for electron beam welder tables ..	1396
Tape-controlled drilling, boring, tapping and milling machine. Cophimatic ..	581	Technoimpex (Hungarian Machine Industries Foreign Trade Co.): Semi-automatic copying lathe ..	721	Thor Tools, Ltd.: Pneumatic chipping hammer ..	348
Tape-controlled drilling machine. Experience with ..	1314	Tedeco magnetic detector unit ..	1223	Thread cutting sticks. Supexco ..	1123
Tape-controlled drilling machine. Fostick type V56 Tape-Drill 3-in. ..	1307	Tee-Slot clamps. Carver ..	1333, 1459	Thread and form rolling machine. Set-up on Lanhylol ..	1051
Tape-controlled drilling machine. Leland-Gifford type 11-15 ..	1152	Teelcon Metals, Ltd.: Smatumetal magnetic material ..	1424	Thread grinder. Temperature-controlled room for Matrix ..	1276
Tape-controlled drilling machine. Middlesex NC 100 Speedrill ..	607	Teleflex Products, Ltd.: Research and development centre ..	50	Thread milling machine. Lees-Bradner type 5A combined gear hobbing and thread-rolling machine. Hartford type 0-400 flat-die ..	950
Tape-controlled drilling machine. Wadkin type TH Mark 2 ..	936	Telematic 111 control equipment. Springfield Opro-Turn lathe with Cincinnati ..	953	Thread rolling screws. Holtite Taptite Thread whirling machine, Boehringer special-purpose, with Burgsmüller whirling attachment ..	719
Tape-controlled horizontal boring, milling and semi-jig boring machine. Cornac Stabimajor ..	286	Télémeccanique Electrique, La: Tape control equipment on Sculfort-Salomé Synchromat lathe ..	1433	Threads, Silver plating, to prevent seizure ..	835
Tape-controlled horizontal drilling, milling, tapping and boring machine. Lahr Rigibed ..	1435	Télémeccanique Electrique (Gt. Britain), Ltd. ..	1433	Threaded inserts. Long-Lok T-seal self-locking ..	721
Tape-controlled jig borer. Fostick Foematic type 56 ..	599	Temperature-controlled room for Matrix thread grinder ..	1276	Threading attachments. Criterion tapping and ..	241
Tape-controlled lathe. Sculfort-Salomé Synchromat ..	1387	Templa-Turn control system for machine tools. Bullard ..	353	Threading and knurling rotor shafts at one operation. Lanhylol machine set up for ..	1267
Tape-controlled machine for drilling printed circuit boards. Edlund type NPB ..	1432	Templa-Turn 2-spindle vertical chucking automatic. Set-up on ..	1269	Threading machine. Rigidip pipe ..	821
Tape-controlled machining centre. Cincinnati type ATC ..	1272	Templa-Turn single-spindle vertical chucking machine. Forms produced on a ..	1269	Threading tools. Qualicut-Komet precision ..	1421
Tape-controlled machining centre. Kearney & Trecker Milwaukee-Matic series Eb, with automatic tool changing ..	1000	Templates, Setting, reduce changeover time ..	368	Three-dimensional inspection machine. Olivetti Inspector 26-16 ..	1315
Tape-controlled "machining centres". Sundstrand Omnimil ..	695	Test panels. Printed circuit Tests on Wimet-Laminat. Results of some tests on ..	1194	Three-dimensional optical square ..	294
Tape-controlled rotary table. Use of a, in the production of optical angular scales ..	19	Tester, involute gear, Crown ..	140	Throw-away blades. Mapal W.P. reamers with ..	1259
Tape-controlled turret drilling machine. Ex-Cell-O Burgmaster type 3 BHTL-SH ..	865	Testing arrangements, Assembly and, for Cincinnati Powermatic machines ..	16	Throw-away milling cutters in metric sizes. Clarkson ..	680
Tape-controlled vertical-spindle chucking automatic. Motch & Merryweather type 21-VNC ..	470	Testing. Developments in non-destructive ..	1131	Throw-away tip made from Wimet-Laminat ..	732
Tape-Drill tape-controlled drilling machine. Fostick type V56 ..	600	Testing equipment. Matrix Mark 3 high-speed automatic circular division ..	11	Throw-away tip tooling. Uddeholm ..	480
Tape reader and re-spooler. New Rheem high-speed ..	1152	Testing equipment. Ultrasonoscope automatic ultrasonic ..	757	Throw-away tip tooling. Wider application of ..	609
Tape recorder chassis. Die cast ..	1384	Testing machine. Avery type 6704 impact ..	771	Thrusters. British Brown-Boveri electro-hydraulic ..	87
Tape recorder. Training with the aid of a ..	206	Testing machine, Avery type 7110/DCJ, installed for research into fine-blanking ..	1049	Tiki Engineering Co., Ltd.: Special automatic wire brushing machines ..	976
Tapes. New Sellotape masking ..	819	Testing machine, Avery type 7113 CSB universal ..	1041	Time. changeover, Setting templates reduce ..	368
Tapemaster machines, Components produced by continuous-path milling on Hayes, fitted with Ferranti equipment ..	611	Testing machines. Avery furnace for universal ..	1327	Times Machinery Co., Ltd. ..	460
Tapemaster machine, Hayes-Ferranti, installed in Ferranti works ..	1219	Testing. non-destructive, Gamma radiation equipment for radiographic Testing by the resonance method. Equipment for ..	1230	Timer. Fairley electronic event ..	72
Taper rolling. Automatic ..	491	Thermalastic electrical insulation system ..	375	Timers for Hoover Keymatic washing machines. Assembling automatic ..	116
Tapping attachment. Tadc Auto-gard ..	880	Thermatool high-frequency welding process for producing thin tube ..	1066	Timing unit. New Trumeter ..	1337
Tapping head. Inca 2-spindle ..	547	Thermatool welding process. Tubes produced from spirally-wound strip material by the ..	916	Tin improves machinability of cast iron ..	35
Tapping machine. Meddings drilling and ..	214	Thermatool welding. Special sections made by ..	971	Tin-nickel plating protects disc brake pistons ..	298
Tapping machine. Polish-built type PAWN 25 combined press and ..	410		926	Tin Research Institute: Tin improves machinability of cast iron ..	35
	396			Tips. Press for production of cemented carbide tool ..	315

	PAGE		PAGE		PAGE
Tobacco processing equipment. Webster & Bennett 72-in. vertical boring and turning mill set up for machining large rings for primary .. ..	1340	Tractor. E.M.I.-Youngman Robotug driverless .. ..	309	Tri-Ni plating process. Efco-Udylite equipment for the treatment of wheel rims by the .. ..	502
Tolwood Multifasteners, Ltd.: Piercenuts applied to sheet steel panels by Redman Uni-Pierce tool ..	763	Tractor unit for welding and cutting torches. Interlas Beetle variable-speed .. ..	896	Triefus Industries, Ltd.: Diamond tools for dressing crank-shaft grinding wheels .. ..	346
Tonner floor crane. Westinghouse ME ..	708	Training with the aid of a tape recorder .. ..	819	Trimming and forming machines. MBM type-AVM .. ..	485
Tool changing. Automatic .. ..	515	Training equipment. Mondiale .. ..	657	Trimming machine for pressings. Widant type BSO .. ..	653, 1069
Tool changing. Cincinnati type ATC tape-controlled machining centre with facilities for automatic .. ..	1000	Transarm (Coventry), Ltd.: Automatic machine for assembling dowel pins to timing sprockets ..	820	Trimming press. Erfurt type PEE/1 open-fronted .. ..	416
Tool changing on a Milwaukee-Matic. Automatic .. ..	523	In-line transfer machine for assembling rear-axle cross-members .. ..	292	Tripet MAR 2000 high-precision cylindrical grinder, Swiss-built ..	702
Tool control boards and associated equipment. Le Pla .. ..	242	Semi-automatic assembly machine for vehicle brakes .. ..	1311	Trist, Hubert H.P., & Co., Ltd.: Nylon coiled hose .. ..	1396
Tool for grooving operations. All-carbide lathe .. ..	1039	Transfer feed unit for cold extrusion presses .. ..	198	Trist, Ronald, Controls Ltd.: Triast-Sauter heating and humidity controls .. ..	425
Tool, handling, for small parts. Flexyfinger .. ..	883	Transfer machine for assembling rear-axle cross-members. In-line .. ..	292	Triulzi, A., s.a.s.: High-speed injection on pressure die casting machines .. ..	946
Tool material. Wimet-Laminate - a new .. ..	732	Transfer machine. The Boma Centri-Column rotary .. ..	869	New die casting machines .. ..	430, 487
Tool pre-setting arrangements for H. Ernault-Somua lathe .. ..	137	Transfer machine. Buhr Economat in-line, for cylinder heads .. ..	698	Truck. Polymathic Coolite type 4100 lift .. ..	321
Tool pre-setting. The importance of ..	627	Transfer machine. Combined Swiss automatic and rotary .. ..	1110	Truck. Polymathic Coolite 1½-ton pallet .. ..	145
Tool pre-setting on numerically-controlled machines. Lodge & Shipley Numeri-Set equipment for .. ..	602	Transfer machine. Gilman 10-station, for automatic assembly of connecting rods .. ..	153	Trucks. Polymathic Coolite and Cub trucks in use at Rolls-Royce .. ..	1063
Tool. turning, Rosa type ER 64 .. ..	1141	Transfer machine. An interesting Pollard rotary .. ..	1364	Truecut, Edwards Besco, Mark-2 type 8/125 precision guillotine .. ..	100
Tools. Carborundum ceramic cutting .. ..	922	Transfer machine for operations on railway truck axles. Snyder .. ..	255	Try European Machines, Ltd.: View in the main showroom .. ..	216
Tools. Chinese sintered carbide .. ..	762	Transfer machine. Use of Lamb 32-station, for assembling cylinder head .. ..	411	Trumeter Co., Ltd.: New timing unit .. ..	1337
Tools. holder for screwed-shank, Dormer series 2 Heli-Matic .. ..	263	Transfer machine. Wavis Job-O-Matic versatile multi-spindle rotary ..	1132	Try, Gordon, Ltd .. ..	96
Toolholders and chucks. Alu-Set .. ..	354	Transfer machines. Le Pla control boards and associated equipment for .. ..	242	Tube bending machine. Wallace 1100 series Hydra-Pnu .. ..	197
Toolholder for machining slots. Metoh eccentric .. ..	1140	Transfer machines for operations on Ford cylinder blocks. Buhr in-line ..	1284	Tube bending machine. Wallage 1100 series Hydra-Pnu .. ..	197
Toolholders. Perman Quicklock .. ..	887	Transfer machines. Polish-built bed unit for use in construction of ..	365	Tube cutting machine installation. Automatic .. ..	833
Toolholders for use with throw-away tip cartridges .. ..	609	Transfer machines recently installed at BMC Longbridge. Archdale in-line .. ..	250	Tube de-rodging machine. Bronx type BRO bar straightening and ..	1044
Tooling, multiple, on lathes and other machine tools. Snow-Matic indexing table for .. ..	691	Transfer machines. Polish hydraulic slide unit for .. ..	365	Tube. High-frequency welding process for producing thin .. ..	916
Tooling. New Sandvik .. ..	559	Transfer press. Chappuis 4 by 40 horizontal .. ..	612	Tube Investments, Ltd. .. ..	1059
Tooling. throw-away tip, Wider application of .. ..	609	Transfer press. Waterbury-Farrel type 1010 10-station .. ..	1002	Tube reducing and bending machines. Veenstra .. ..	655
Tooling. Uddeholm throw-away tip ..	480	Transfer system, Winna programmed batch, for metal finishing .. ..	703	Tubes. Clayton-Still extended-surface Tubes, Welded, produced from spirally-wound strip material ..	971
"Toolmaker" cabinet. A Bedford Toolworks, Ltd.: .. ..	1422	Transfermatic, Clarktron, electric control system on Waterbury Farrel transfer press .. ..	1002	Tubing, for spark machining electrodes. Sparkonite 10 .. ..	127
Lamination tool made from Jessop-Saville Alloy C steel .. ..	727	Transmission casing for BMC 1800 car. Installation of Archdale transfer machines for operations on .. ..	250	Tubular T-pieces of copper and stainless steel, Special technique for producing, on Nordberg hydraulic presses .. ..	1054
Tooth spacing. Fellows No. 8 T.I.M. instrument for checking .. ..	608	Transmission-shaft assemblies. Steelweld fully-automatic friction welding machine for .. ..	816	Tuffriding treatment. Die casting dies improved by .. ..	945
Torch. Eutectic Microfil oxy-acetylene .. ..	426	Transetherm H.R. gold plating process. PMD .. ..	10	Tufnol, Ltd.: Epoxide laminates .. ..	16
Torch set. welding and flame-cutting, Suffolk Iron Foundry type S.I.F. Silverstreak 1000 .. ..	184	Traub, Hermann, Maschinenfabrik: A 3F 125 3-spindle chucking automatic .. ..	454	Tung Fong Carbide Manufacturing Works: Sintered carbide tools .. ..	762
Torches. welding and cutting, Interlas Beetle variable-speed tractor unit for .. ..	896	B-series single-spindle automatics A 80 single-spindle automatic ..	531	Tungsten carbide ball plug gauges ..	861
Torrington Co.: The stationary-spindle process for swaging parts of various cross sections .. ..	1380	Turret unit for A25 automatic .. ..	769	Tungsten carbide inserts. Progressive press tools with .. ..	818
Torshilla Holemaster co-ordinate drilling and boring machine .. ..	887	Trennjaeger (G.B.) Ltd.: Cold saw with compound tilting head Variant NE 250 transportable cold sawing machine .. ..	1221	Tuplin, W.A., D.Sc., M.I.Mech.E.: Numbers of teeth in gears .. ..	1333, 1459
Torvac, Ltd.: Electron beam welding service 18-in. vacuum unit and furnace element .. ..	868	Trepan-boring tool .. ..	1205	Turbine blade. Electro-chemical machining of a .. ..	1198
Towler Hydraulics, Ltd.: New in-line hydraulic pumps .. ..	358	Trepanning or boring accurately spaced and sized holes at one operation. Drillmation Bore-Pann machine for .. ..	996	Turbines. Modern practice in the design and production of steam ..	1204
Townsend & Coates, Ltd. .. ..	255	Tri-Matic grinder with oscillating belt. Barnes T-18 .. ..	601	TurboMatic coolant clarifying installation at Rolls-Royce ..	499
Tracemaster machines, Components produced by hydraulic copy-milling operations on Hayes .. ..	1219			Alfa-Laval .. ..	499
Tracing equipment. Optimec Supertrace Mark II profile .. ..	144			Turbomotor fluid couplings. Lonertia ..	873
Tracing system. DoALL bandsawing machine arranged for automatic control from a line drawing by a photo-electric .. ..	603			Turner, Henry, (Machine Tools), Ltd. .. ..	420, 660
Tractor components. Automatic welding machine for reclaiming .. ..	1194			Turner Machine Tools, Ltd.: Type 436-B Linisher abrasive-belt grinder .. ..	382
				Turning attachment. MAS Kovosit hexagon .. ..	1281
				Turning and boring machine of unusual design. Skoda vertical .. ..	554, 622



	PAGE
Turning and boring mill, Bullard 46-in. Dynatrol vertical, with Renwell 4-axis numerical control ..	590
Turning and boring mill, Richards BM04 Electramill vertical ..	1038
Turning and boring mills, Morando type CF vertical ..	459
Turning, copy, with a Tynac Tracer attachment. High-precision ..	989
Turning, diamond, Reconditioning electrical components by ..	45
Turning machine, crankshaft, Dorries type KB 16 ..	533
Turning and milling machine, Froriep contour, for Boeing ..	71
Turning stepped and profiled forms on shafts. Taber type 906-5 automatic centreless machine for ..	1156
Turning tool, Rosa type ER 64 ..	1141
Turning two bevel pinion blanks, Bullard Temple-Turn 2-spindle vertical chucking machine set up for ..	1269
Turret, "American Tool Works" square tool, for numerically-controlled lathes ..	1053
Turret unit for Traub A25 automatic TwinGrip centreless grinders. Cincinnati Filmatic ..	475
Twist drill grinder, Arboga type BEP 308 ..	99
Twist drill grinder, Brierley Rotacone ..	478
Twist drill grinder, Dormer type 78 ..	477
Tynac Tracer attachment. High-precision copy-turning with a ..	989
Typewriters. Hermes: Assembly and checking operations on typebars and segments ..	172
Final assembly and finishing operations ..	1244
Production of typebars ..	4

## U

U.S. Industries, Inc., U.S.A.: Production Machine Divn.: Changematic press line in Ford factory at Cologne ..	1003
High-velocity forging machines ..	228
Production facilities and selling arrangements for USI presses in the U.K. ..	729
U.S. Industries Inc. (London): Production facilities and selling arrangements for U.S.I. presses in the U.K. ..	729
See also ..	1005
U.S. machine tool exports 385, 509, 840, 956, 1176, 1345	
U.S. Trade Center. Exhibition of industrial fasteners at the ..	718
Udal, J.P., Ltd.: Transfer feed unit for cold extrusion presses ..	196
Uddeholms Aktiebolag: Uddex throw-away tip tooling ..	480
Uddeholm, Ltd.: Lighting mast ..	1423
See also ..	480
Ultra Radio & Television, Ltd.: Use of E.M.I.-Youngman Robotug system in assembly shop ..	309
Ultraphot microscope for examination of marking dies. Zeiss ..	1399
Ultrasonic cleaning unit, Elliott-Automation ..	750
Ultrasonic cleaning unit, Specialty-built ..	371, 510
Ultrasonic cleaning unit. Typical general-purpose ..	370
Ultrasonic drilling machine, Kerry's ..	373
Ultrasonic mixing of oil and water. Sontprobe for ..	372

Ultrasonic testing equipment. Ultrasonoscope automatic ..	757
Ultrasonic welding equipment ..	373
Ultrasonic applications. A survey of developments in ..	370, 510
Ultrasonoscope Co. (London), Ltd.: Automatic testing equipment ..	757
Portable ultrasonic pulse-echo unit for flaw detection ..	374
Uni-Pierce tool. Redman ..	763
Uni-Tube, Ltd.: Flexible coupling ..	22
Unicast ceramic moulding process. Typical castings produced by the ..	725, 1123
Unimat single-spindle automatic ..	1006
Union Carbide film on Flame Plating ..	1345
Unit-construction fine-boring machine. H.P.E. ..	529
United construction. Rapiatan hinged steel plate conveyors of ..	772
"Unit dies" for die casting ..	940
United Aircraft Corp.: Hamilton Standard Divn.: Electron beam welder tables fitted with Roundway bearings ..	1396
6-kW. electron beam welder ..	1253
United Steel Companies, Ltd.: Film: Cauldron bubble ..	168
Universal Kugellager-Fabrik G.m.b.H. Universal machine tool. Labormil ..	640, 351
Urethane roll. Forming machine with ..	186
Urwick Management Centre: Use of VISA teaching aid for production planning and control ..	1119
Utilization of centre, turret and capstan lathes ..	963

## V

V.D.F. Diamatic size control system for lathes ..	1137
V.D.F. Machine tool developments by VISA teaching aid for production planning control ..	1369
V.W.F. pressure die casting machines Vacsyn slow-speed synchronous motor. New ..	988
Vactric Control Equipment, Ltd.: New Vacsyn slow-speed synchronous motor ..	988
Rotary servo actuator ..	765
Tedeco magnetic detector unit ..	641
Vacuum Industrial Applications, Ltd.: Vacuum metallizing plant (type VIA-VAC EH72) ..	697
Vacuum printing table. Loftline ..	1173
Vacuum pump. Welch Duo-Seal No. 1402 rotary ..	1225
Vacuum unit and furnace element. Torvac 18-in. ..	868
Valecky, J.: Light alloy castings in the production of the Skoda 1000MB car ..	1439
Valve. I.G.E. quick-acting fail-safe ..	1424
Valve. Martonair type S.786C air ..	1394
Valve. Martonair type S.21/48 high-sensitivity pneumatic ..	1252
Valve spools. Leland-Gifford tape-controlled drilling machine set up for drilling ..	607
Valve spools. Vero 18-spindle tape-controlled Autodrill for operations on ..	269
Valve. Whitmetal nut for sluice ..	932
Valves. Ellison hydraulic check ..	825
Valves, Honing 10-in. long bores of hydraulic, on Delapena vertical machine ..	47
Valves. J.J. Churchill range of pneumatic control ..	1120
Van Norman Machine Co.: 2G Mill for milling, drilling and boring operations ..	596
No. 3C-12 centreless grinder ..	596

Vanco Machine Co., Ltd.: Flexiband No. 1 abrasive band finishing machine ..	416
Flexiband abrasive-belt deburring and polishing machine ..	351
Transportable variable-speed 17-in. barrel finishing machine ..	351
Vari-speed lathes. Boxford ..	462
"Variable incident stimulation apparatus" teaching aid for production planning and control ..	1119
Variant NE 250 transportable cold sawing machine. Trennjaeger ..	1221
Vaughan Associates, Ltd. 15, 331, 455, 471, 530, 582, 775, 1153, 1286	
Vaughan, F.E., Ltd. ..	1110
Vauxhall Motors, Ltd.: Installation of Spacesaver storage system ..	439
Installation of H.P.E. unit-construction fine-boring machine ..	529
New quality control centre ..	1330
Veenstra, W., & Co., N.V.: Tube reducing and bending machines ..	655
Veenstra, W., & Co., (England) Ltd.: Verelinge Werkzeugmaschinenfabrik A.G.: A.W.F. pressure die casting machines ..	210
Verenigd Plastic-Verkoopkantoor N.V. Vero Electronics, Ltd.: Fine pitch Veroboard ..	617
Circuit board mounting bracket ..	1220
Vero Machine Tool Co., Ltd.: 18-spindle tape-controlled Autodrill for operations on valve spools ..	269
1000 series Autodrill with Ferranti Scope 200 series numerical control equipment ..	1069
Versa-Tronic numerically-controlled vertical boring and milling machine. Lucas ..	15
Versatool range of tool and component storage equipment. Pinder ..	1222
Verson Allsteel Press Co.: Arrangements for building Verson presses in U.K. ..	722
Automated cold-extrusion line for producing five sizes of gudgeon pins ..	38
Diamond finishing of carbide punches and dies ..	313
300-ton press with 48-in. square bed Transmat high-speed transfer press ..	722
2,500-ton double-action press ..	722
Vessel, pressure, sections. Large machine tools for ..	71
Vibratory bowl feeding unit. "Aylesbury Automation" ..	349
Vibratory finishing machine. Carborundum ..	925
Vices. Thienes work-holding clamps and Vickers Sperry Rand, Ltd.: New Vickers-Detroit range of double intra-vane pumps ..	151
Installation of Peter Walters AL3 lapping machine for finishing rotors and rings for hydraulic motors ..	331
Vickers, Ltd.: Installation of gamma radiation equipment for radiographic non-destructive testing ..	1230
Vigers, Stevens & Adams, Ltd.: Plastik flooring for light engineering shops ..	1438
Vilnyus cylindrical grinding machine ..	79
Vilnyus type 3E 153 high-precision cylindrical grinder ..	304
Vimarc vibrator motor ..	894
Visagauge pulse-echo gauge. Checking dimensions of integrally machined airframe part with a ..	374
Visolux photo-electric counters ..	425
Visual Engineers, Ltd. ..	537, 1067
Voumard Machines Co. S.A.: Internal grinding machines ..	471

	PAGE		PAGE		PAGE
Vu-Point direct-reading position-indicating equipment on Microtecnica profile projector .. .. .	1217	Wavis Engineering Development, Ltd.: The Job-O-Matic transfer machine ..	1132	Wickman Machine Tool Sales, Ltd.: Films and lectures .. .. .	219
Vu-point position display equipment. Ex-Cell-O contour projector with ..	593	Weisser, Eugen, & Co. KG.: "Junior" universal lathe .. ..	456	See also .. 464, 606, 653, 932, 991, 996, 1051, 1149	
Vypatch plastics putty .. .. .	1143	Welch Duo-Seal No. 1402 rotary vacuum pump .. .. .	1225	Wickman-Scrivener, Ltd.: Factors affecting the achievement of roundness by centreless grinding ..	984
<b>W</b>					
Wadkin, Ltd.: Batch of six type TH co-ordinate setting single-spindle drilling, tapping and reaming machines nearing completion	450	Weld, Butt-, backing system. Serberx ..	72	Work-handling arrangements for duplex grinders .. .. .	991
Type MRD radial-arm drilling machine .. .. .	535	Weld-Lite helmet lamp .. .. .	645	Wickman-Wimet, Ltd.: Results of some tests on Wimet-Laminate .. .. .	1195
Type TCD tape-controlled drilling machine installed in Dawson, Payne & Elliott works. Experience with ..	1307	Welded-steel machine tool structures ..	1104	Wimet-Laminate - a new tool material	732
Type TH Mark 2 tape-controlled drilling machine .. .. .	266	Welded tubes produced from spirally-wound strip material .. .. .	971	Widani type BSO trimming machine for pressings .. .. .	653, 1069
Wafum TPD 50A prototype lathe. Polish-built .. .. .	363	Weldguard. Cleervue .. .. .	1094	Widdowson, Herbert, & Sons Ltd. ..	475
Wagner & Co.: Tailstock bearing arrangement on a large lathe .. .. .	582	Welding and cutting torches. Interlas Beetle variable-speed tractor unit for	896	Wielkopolska Fabryka Urzadzen Mechanicznych: Bed and slide unit for use in construction of transfer machines .. ..	366
Wall Colmonoy, Ltd.: Colmonoy No. 5 nickel chromium boron alloy for hard-facing dragline roller shafts .. .. .	420	Welding. Electron beam, as a production process .. .. .	796, 852	Wiggin, Henry, & Co., Ltd.: Installation of 12,000-item Strafolan planning board .. ..	1168
Reclaiming damaged shafts with keyways .. .. .	70	Welding equipment. Balfour & Darwins pellet .. .. .	1329	Wild, A.G., & Co., Ltd.: Powered storage sequencers .. ..	1212
Type S100 Fusewelder .. .. .	1034	Welding equipment for heat exchangers. Superheater automatic .. .. .	408	Wild Barfield, Ltd.: Hardening fixture .. .. .	403
Wallace Supplies Mfg. Co.: 1100 series Hydra-Pnu tube bending machine .. .. .	197	Welding Equipment Service Co., Ltd.: Cadet gas regulator .. .. .	268	Wild, Thos. C., (Machinery) Ltd. ..	416
Walmseys (Bury), Ltd.: Machining large castings on G & L-Fraser horizontal borers .. .. .	822	Welding and flame-cutting torch set. Suffolk Iron Foundry type S.I.F. Silverstreak 1000 .. .. .	184	Wilkins & Mitchell, Ltd.: Type E30HB1-10 brass stamping press with sub-press .. .. .	539
Walton Electronics, Ltd.: Arc-Out tap eroder attachment to facilitate salvaging large components	979	Welding Improvements, Ltd.: New Fontargen surfacing alloys ..	1395	Williams, H., & Sons, Ltd. .. .. .	1222
Warburton-Brown, D.: A.M.I. Mech. E.: Surface finish obtainable with abrasive machining .. .. .	179	Welding machine. "A.I. Welders" type FW/6 friction .. .. .	84	Williams, Peter, (Filing Systems), Ltd.: 12,000-item Strafolan planning board .. .. .	1168
Ward, H.W., & Co., Ltd.: Capstan lathe fitted with I.A.E. tape control system .. .. .	379	Welding machine. Automatic corner-seam Projection spot .. .. .	748	Willmott, Francis B.: The importance of communication in production departments .. .. .	505
Ward, Thos. W., Ltd. .. .. .	544	Welding machine. Hawker Siddeley Dynamics electron beam .. .. .	84, 1253	Willcock self-locking rivet bush .. ..	321
Warner electromagnetic clutches and brakes. Rotary indexing table incorporating .. .. .	939	Welding machine for reclaiming tractor components. Automatic .. .. .	1194	Wilson numerically-controlled 4-spindle profile milling machine .. .. .	527
Warner-Swasey Asquith 3AC automatic with numerical control .. .. .	452	Welding machine. Sciaky electron-beam Welding machine. Sciaky special-purpose 3-phase projection .. .. .	92	Wimet-Laminate - a new tool material	732
Warner & Swasey Co.: Fine-Adjust boring bar .. .. .	1388	Welding machine. Steelweld fully-automatic friction, for transmission-shaft assemblies .. .. .	816	Wimet-Laminate. Results of some tests on .. .. .	1195
Servo-feed numerically-controlled turret lathe .. .. .	528	Welding machine worktable. Roundway bearings for electron beam .. .. .	1396	Windley Bros., Ltd.: Crown involute gear tester .. ..	140
SCA-25 turret lathe with Bunker-Ramo numerical control .. .. .	152	Welding. micro-, Laser for .. .. .	1415	Window frames. Machine for piercing ..	1310
Staging panel and function control board for the 3AC single-spindle chucking automatic .. .. .	1151	Welding operations on auxiliary equipment for ships. Some special units employed for .. .. .	340	Winna programmed batch transfer system for metal finishing .. .. .	703
Type OAB 1½-in. capacity single-spindle bar automatic .. .. .	598	Welding plugs to exhaust manifolds. Helliwells special machine for ..	410	Winter, O., (Technical Agencies) Ltd.: Wire brushing machines. Special Tiki automatic .. .. .	976
Lahr Divn.: Rigid tape-controlled horizontal drilling, milling, tapping and boring machine .. .. .	599	Welding process. Producing thin tube. High-frequency .. .. .	916	Wire-reinforced PTFE sheet .. .. .	956, 1011
Warren, A.P., Ltd.: Rapid Tap cutting fluid .. .. .	75	Welding process. Ultrasonic .. .. .	373	Wolters, Peter, AL2 lapping machine. Finishing rotors and rings for hydraulic motors on a .. .. .	331
Warrior Quick Jet tap for blind holes ..	770	Welding service. Torvac electron beam Welding. Special sections made by Thermatool .. .. .	1232	Wong, G.S.K.: An interface restrictor hydrostatic bearing .. .. .	1095
Washing and cleaning machines installed at Austin works. Dawson .. .. .	1035	Welding unit. Cromparc 875 stud ..	1042	Wooden mock-up assists hob setting ..	234
Washing machines. Assembling automatic timers for Hoover Keymatic .. ..	116	Werner, Fritz, A.G.: Type BF 3 V bed-type milling machine .. .. .	1090	Woodhaven Metal Stamping Co., Inc.: Notching with Ferro-Tic punches ..	315
Waterbury Farrel: Type 1010 10-station transfer press Jones & Lamson Divn. .. .. .	1002	Type FV 3 milling machine with Zeiss Multiprismat numerical positioning system .. .. .	891	Work-handling arrangements for Wickman-Scrivener duplex grinders	991
Specialmatic numerically-controlled turret lathe .. .. .	1385	Westinghouse Brake & Signal Co., Ltd.: ME Tonner floor crane .. .. .	706	Work-handling and communications systems for batch work. Production control .. .. .	684
Waveguide components. Numerically-controlled machining of .. .. .	497	Westinghouse Defence & Space Center: Laser for micro-welding .. .. .	1415	Work-holding clamps and vices. Thienes .. .. .	295
Waveguides. Dip brazing ensures high-quality .. .. .	1325	Westool, Ltd.: Warner electromagnetic clutches and brakes for rotary indexing table ..	939	Work-holding equipment. Clamp & Jack Work-loading equipment. Schaudt type ERS cylindrical grinder with automatic Workshop equipment. New Bedford steel Worm spindle, Set-up on Petermann automatic for production of, from brass bar .. .. .	146
		Westwind Turbines, Ltd.: Developments in connection with air-bearing spindles .. .. .	188	Wormwheels cut on Churchill hobbing machines with variable feed rates ..	350
		Wheel balancing equipment. Eltrodyn ..	760	Wotan-Werke G.m.b.H.: Two table-type horizontal boring and milling machines installed in Belliss & Morcom works .. .. .	642
		Wheel. Bear-Tex abrasive flap .. .. .	92	Type SHA 205/8 G internal and face grinding machine .. .. .	1434
		Wheel cleaner. Sheffield Super-Jet ..	689	V.W.F. pressure die casting machines	210
		Wheel. diamond, I.D.P. metal-bonded ..	324		
		Wheel. Large diamond .. .. .	154		
		Whitemetal nut for sluice valve .. ..	932		
		Wickman, Ltd.: Optical profile grinders installed in works of Brock Tools, Ltd. .. ..	1339		
		Profile milling machine .. .. .	1283		
		Single-spindle automatics now being built in John Lang works .. .. .	440		

	PAGE
Wrench, Curtiss-Wright Swench hand-operated impact .. .. .	719
Wright, Wallace, Ltd.: Tymac Tracer attachment for high-precision copy-turning .. .. .	989
Wyman Gordon Co.: Large forgings of maraging steel ..	871
Wyman Gordon Co.: Large aluminium alloy forgings for Saturn V rocket .. .. .	209
Wyvern Machines, Ltd.: A new machine spindle braking system .. .. .	1036

# Y

Yaskawa Manufacturing Co., Ltd.: Minertia motors .. .. .	412
Youngman Robotug driverless tractor. E.M.I. .. .. .	309

# Z

Zagar-Dex 288-spindle machine for drilling circuit boards .. .. .	1046
Zakłady Przemysłowe: FGC 25A electronic copy-milling machine .. .. .	364
Programme-controlled type FYA 32A vertical milling machine .. .. .	365

# PAGE

Zbrojovka milling machine with Elliott sequence control .. .. .	551, 646
Zeiss, Carl: Multipriamat numerical control system on Werner FV 3 milling machine ..	892
Multipriamat numerical control system on Scheu-Schwartzkopff turret lathe	1067
Ultraphot microscope for examination of marking dies .. .. .	1399
Zeiss electron beam welding machine ..	797
Zig-Zag CNZ numerical control equipment on "Rigid" vertical milling machine .. .. .	1431
Zinc-plating. Ionic double their capacity for barrel .. .. .	247
Zwicky, G., (London), Ltd. .. ..	538

# PAGE

produced by the NEWPRINT system  
Hobbs the Printers Ltd, Millbrook, Southampton



